

Curriculum Vitae**Professor Benjamin Howden****Name:** Benjamin Peter **Howden** (MBBS (Hons), PhD, FRACP, FRCPA, FASM)**Email:** bhowden@unimelb.edu.au**Current Appointments (Academic):**

- 2014 - Professor and Director, Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology and Immunology, The University of Melbourne at the Doherty Institute for Infection and Immunity
- 2016 - 2020 NHMRC Practitioner Fellow, Department of Microbiology and Immunology, The University of Melbourne at the Doherty Institute for Infection and Immunity
- 2015 - Medical Director, Doherty Applied Microbial Genomics, Department of Microbiology and Immunology, The University of Melbourne at the Doherty Institute for Infection and Immunity
- 2018 - Program Director, Fleming Fund Fellowship Scheme, Doherty Institute for Infection and Immunity

Current Appointments (Hospital):

- 2014 - Infectious Diseases Physician, Austin Health
- 2014 - Director, WHO Regional Reference Laboratory for Invasive Bacterial Diseases – Vaccine Preventable
- 2016 - Visiting Medical Microbiologist, Victorian Infectious Diseases Reference Laboratory, Royal Melbourne Hospital at the Doherty Institute

Previous Appointments (Academic):

- 2012 - 2015 NHMRC Career Development Fellow, Austin Medical Research Foundation and University of Melbourne at Austin Hospital
- 2011 - 2014 Honorary Associate Professor, Department of Microbiology and Immunology, University of Melbourne
- 2011 - Adjunct Senior Lecturer, Department of Microbiology, Monash University
- 2008 - 2011 Associate Researcher, Department of Microbiology, Monash University
- 2004 - 2008 NHMRC Postgraduate Medical and Dental PhD Fellow, Department of Microbiology, Monash University
- 2001 Lecturer, Department of Microbiology, Monash University
- 2000 Chief Medical Registrar, Monash Medical Centre

Previous Appointments (Hospital):

- 2011 - 2014 Head of Microbiology, and Infectious Diseases Physician, Austin Health
- 2007 - 2011 Medical Microbiologist and Infectious Diseases Physician, Austin Health
- 2004 - 2007 Part Time Infectious Diseases Physician, Austin Health
- 2006 Medical Microbiologist, Melbourne Pathology, Australia
- 1999 - 2003 Advanced trainee in Infectious Diseases and Medical Microbiology, Monash Medical Centre, Austin Health and The Alfred Hospital
- 1996 Medical Volunteer, Salvation Army Mission Hospital, Zambia
- 1994 - 1998 Intern, Medical Resident and medical Registrar, Monash Medical Centre

Curriculum Vitae**Professor Benjamin Howden****Awards and Honours:**

1992	Professors Prize in Surgery, Monash University
2001	Best Case Presentation, Australasian Society for HIV Medicine Conference, Melbourne
2004	Australian Society for Antimicrobials International Travel Award
2004	Interscience Conference on Antimicrobial Agents and Chemotherapy (44 th ICAAC) Student Travel Award, Washington, USA
2006	Australian Society for Antimicrobials International Travel Award
2006	Interscience Conference on Antimicrobial Agents and Chemotherapy (46 th ICAAC) Student Travel Award, San Francisco, USA
2008	Royal Australasian College of Physicians CSL Fellowship. Awarded for best research proposal on infection and immunity
2010	Commendation, Victorian Premiers Prize for Medical Research, Victoria, Australia
2011	American Society for Microbiology (ICAAC) Young Investigator Award
2014	Frank Fenner Award, Australian Society for Microbiology
2015	Frank Fenner Award, Australasian Society for Infectious Diseases
2015	Howard Florey Orator, Australian Society for Antimicrobials Annual Scientific Conference
2020	Presidents Award, Public Health Association of Australia for outstanding contribution to the betterment and protection of public health in Australia (during the COVID-19 pandemic)
2020	Fellow of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID)

Academic Record and Qualifications:

1987	Victorian Certificate of Education, Wesley College, Melbourne
1993	Bachelor of Medicine, Bachelor of Surgery (MBBS, 1 st class Honours), Monash University
2002	Fellow of the Royal Australasian College of Physicians (FRACP, Infectious Diseases)
2004	Fellow of the Royal College of Pathologists of Australasia (FRCPA, Microbiology)
2009	Doctor of Philosophy (PhD), Department of Microbiology, Monash University, Australia. Awarded May, 2009. Thesis title: "Molecular Mechanisms of Low-Level Vancomycin Resistance in Clinical <i>Staphylococcus aureus</i> "
2017	Fellow of the Australian Society for Microbiology (FASM)

Supervision and Mentoring:

Accredited Higher Degrees Supervisor, The University of Melbourne

2008 -2014	Tutor and Clinical Teacher in Microbiology and Infectious Diseases for Undergraduate and Postgraduate Students, University of Melbourne (Austin
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- Health)
 2008-2014 Supervisor and Mentor for Infectious Diseases (FRACP) and Microbiology (FRCPA) Trainees at Austin Health
 2018 Program Director and Mentor, Fleming Fund Fellowship Scheme (Bhutan and Nepal)

Mentored the Following Candidates through the FRACP (Microbiology Exams), Austin Health:

- Dr Peter Kelley, 2008 - 2009
 Dr Emma Bishop, 2010
 Dr Norelle Sherry, 2011
 Dr Kyra Chua, 2012 - 2013

Supervisor for the Following Postdoctoral Researchers:

- Dr Susan Ballard, Austin Health, 2010 – 2015
 Dr Chris McEvoy, University of Melbourne, 2010 - 2012
 Dr Ya-Hsun Lin, University of Melbourne, 2012 - 2015
 Dr Ian Monk, University of Melbourne, 2013 -
 Dr Romain Guerillot, University of Melbourne, 2014 –
 Dr Wei Gao, University of Melbourne, 2015 – 2017
 Dr Anders Goncalves Da Silva, University of Melbourne, 2015 –
 Dr Mark Schultz, University of Melbourne, 2016 –
 Dr Andre Mu, University of Melbourne, 2016 –
 Dr Glen Carter, University of Melbourne, 2014 –
 Dr Natasha Holmes, 2016 – 2019
 Dr Deborah Williamson, 2015 – 2019
 Dr Claire Gorrie, 2017 -

Supervisor for the following PhD Candidates:

- Dr Kyra Chua, Monash University (primary), 2007 - 2013 (PhD awarded)
 Dr Wei Gao, Monash University (primary), 2010 - 2014 (PhD awarded)
 Dr Natasha Holmes, University of Melbourne (primary), 2010 – 2013 (PhD awarded)
 Dr Margaret Lam, University of Melbourne (co-supervisor), 2011 – 2014 (PhD awarded)
 Ms Sarah Baines, University of Melbourne (primary), 2014 – 2018 (submitted)
 Dr Jason Kwong, University of Melbourne (primary), 2014 – 2017 (PhD awarded)
 Dr Jean Lee, University of Melbourne (primary), 2014 – 2018 (submitted)
 Dr Norelle Sherry, University of Melbourne (primary), 2015 –
 Mr Bojang Abdoulie (associate supervisor), Open University, UK, 2016 – 2020 (submitted) – awarded a 4 year African Post Doctoral Training Fellowship by NIH
 Ms Andrea Parisi (associate supervisor), Australian National University, 2016 (PhD awarded)
 Ms Chery Sia (co-supervisor), University of Melbourne, 2018 –
 Mr Yii Nong (co-supervisor), University of Melbourne, 2018 –
 Ms Sara Zufan (primary), 2019 –
 Ms Emily Sotheran (primary), 2019 –
 Dr Stefano Guilieri (primary), 2018 –
 Mr Charlie Higgs (primary), 2019 –

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Ms Nicole Isles (co-supervisor), 2020 –
 Ms Courtney Lane (primary), 2018 –
 Ms Adrianna Turner (co-supervisor), 2020 –
 Dr Katherine Bond (primary), 2020 -

Supervisor for the following Masters Students:

Ms Sarah Baines, University of Melbourne, 2012 – 2013 (1st class honours)
 Mr Justin Stepnell, University of Melbourne, 2011 – 2014 (MPhil, successful completion)
 Ms Nicole Isles, University of Melbourne, 2016 – 2017 (1st class honours)
 Ms Ashleigh Hayes, University of Melbourne, 2018 – 2020

Supervisor for the following MAE students (Australian National University):

Ms Siobhan Tier, University of Melbourne, 2016-2017
 Ms Sophie Bowman-Derrick, 2018 - 2019

Supervisor for the following Honours Students:

Ms Kate Fauensfelder, University of Melbourne, 2010
 Ms Margaret Lam, University of Melbourne, 2010
 Ms Rachael Tong, University of Melbourne, 2017 (1st Class honours)
 Mr Charlie Higgs, University of Melbourne, 2018 (1st Class honours)
 Ms Adrianna Turner, 2019 (1st Class honours, top student award)
 Ms Elizabel Goh, 2020
 Ms Miriam Jones, 2020

Academic and Leadership Roles:

2003 - 2004	Member, Australian Society for Antimicrobials Staphylococcal Working Party (Published guidelines for diagnosis and management of staphylococcal diseases in Australia)
2008	Scientific Organising Committee, International Symposium on Staphylococci and Staphylococcal Infections (ISSSI), Cairns, Australia
2010 - 2013	Editorial Board Member, Infectious Diseases Reports
2010 - 2016	Steering Committee Member, Australasian Society for Infectious Diseases Clinical Trials Network (ASID CRN)
2012 - 2016	Inaugural Chair, Staphylococcal Research Group of ASID CRN
2013	Sabbatical Leave (6 months), Genomics Research Laboratory, University of Geneva Hospital, Geneva, Switzerland
2014	Scientific Organising Committee, International Symposium on Staphylococci and Staphylococcal Infections (ISSSI), Chicago, USA
2014 -	Member, Scientific Advisory Committee, Centre for Infectious Diseases and Microbiology – Public Health, Westmead, NSW
2014 -	Organising Committee, Asia Pacific Congress of Clinical Microbiology and Infection, Melbourne, 2016
2015 - 2018	Section Editor, Journal of Global Antimicrobial Resistance
2016	Scientific Organising Committee, International Symposium on

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2016 Staphylococci and Staphylococcal Infections (ISSSI), Seoul, South Korea
 Program Committee, ASM Microbes (American Society for Microbiology)

2016 - Theme Leader, Antimicrobial Resistance and Health Care Associated
 Infections, Doherty Institute for Infection and Immunity

2016 - Founder and co-chair, Communicable Diseases Genomics Network
 (CDGN), Australia

2017 - Judging Panel, Eureka Prize for Infectious Diseases Research

2017 – 2019 Steering Committee and Track Leader (Clinical Infections and Vaccines),
 ASM Microbes Program Committee (American Society for Microbiology)

2017 Organising Committee Member, Communicable Diseases Control
 Conference, Melbourne, June, 2017

2017 Abstract Reviewer, European Congress on Clinical Microbiology and
 Infectious Diseases (ECCMID)

2017 Deans Fellowship Review Committee, The University of Melbourne

2018 - Organising Committee Member, Communicable Diseases Control
 Conference, Melbourne, Nov, 2019

2018 – Program Director, Fleming Fund Host Scheme, Doherty Institute

2019 – Scientific Advisory Board Member, Melbourne Integrated Genomics
 (MIG), The University of Melbourne

2019 – Scientific Advisory Board Member, Center for New Antibacterial
 Strategies, The Arctic University of Norway

2019 – Chair, Infection Clinical Network, Safer Care Victoria, Victorian
 Government

2020- Editor, Antimicrobial Agents and Chemotherapy, ASM Press

NHMRC Grant Review Panel (GRP) – 2012, 2016, 2017, 2018

External reviewer for NHMRC project grants yearly since 2008

Grant reviews for: Action Medical Research for Children (2015); Wellcome Trust and Royal
 Society (2014), Swiss National Science Foundation (2013), National
 Funding Agency for Research, France (2012), Australian Research Council
 (2014), Dutch National Science Foundation (2014), Medical Research
 Council, UK (2015), The Netherlands Organisation for Health Research
 and Development (2014, 2016, 2017)

Peer review, ad hoc, for: PLoS Pathogens, PLoS One, Antimicrobial Agents and Chemotherapy,
 Clinical Infectious Diseases, Journal of Antimicrobial Chemotherapy, Applied and Environmental
 Microbiology, Medical Journal of Australia, European Journal of Clinical Microbiology and
 Infectious Diseases, International Journal of Infectious Diseases, Expert Opinion on
 Pharmacotherapy, BMC Genomics, BMC Microbiology, BMC Infectious Diseases, Current
 Opinion in Investigational Drugs, Pathology, Diagnostic Microbiology and Infectious Diseases,
 Nature Microbiology

Previous Editor for: Infectious Disease Reports and International journal of Antimicrobial
 Resistance

Curriculum Vitae**Professor Benjamin Howden****Professional Activities:**

2008 - 2010	Committee Member, Australian Society for Antimicrobials
2008 - 2010	Member, Victorian Advisory Committee on Infection Control, Department of Health, Victoria
2010 - 2013	Vice President, Australian Society for Antimicrobials
2014 - 2016	President Elect, Australian Society for Antimicrobials
2011 - 2014	Member, Infection Control Committee, Austin Health
2014 - 2015	Member, Public Health Laboratory Network, Australia
2014 - 2017	Member, National Surveillance Committee, Australia
2014 - 2017	Member, Australian Bioterrorism Laboratory Network, Australia
2015 - 2017	Executive Member, Australian Group on Antimicrobial Resistance
2015 - 2016	Victorian Genomics Advisory Committee, Department of Health and Human Services, Victoria
2015 - 2017	Deputy Chair, Public Health Laboratory Network, Australia
2015 -	Member, Victorian Government Carbapenemase-Producing Enterobacteriaceae (CPE) Incident Management Team
2016	Australian Commission on Safety and Quality in Healthcare, Carbapenemase-Producing Enterobacteriaceae (CPE) Guideline Development Group
2016 - 2020	President, Australian Society for Antimicrobials
2017 - 2021	Chair, Public Health Laboratory Network, Australia
2017 - 2019	Co-chair, Australia Bioterrorism Laboratory Network, Australia
2017	World Health Organization (WHO) Carbapenemase-Producing Enterobacteriaceae (CPE) Guideline Development Group
2018 - 2019	Steering Committee, Infection Clinical Network, Safer Care Victoria, Victoria, Australia
2019 -	Temporary Expert Advisor to WHO WPR Office, Manila, April 2019. Developing an AMR Surveillance Network for the WPR
2019 -	Steering Committee Member, Victorian Government One Health AMR Strategic Committee
2019 -	Member, WHO Steering Group for the development of a landscape analysis for application of WGS in AMR surveillance
2020 -	Chair, Steering Committee, Infection Clinical Network, Safer Care Victoria, Victoria, Australia

Research Funding:**National Health and Medical Research Council (NHMRC) – CI grant only**

2004 - 2007	Howden. NHMRC Postgraduate Dental and Medical PhD Scholarship “Understanding low-level vancomycin resistance in <i>Staphylococcus aureus</i> ” (\$90,100)
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- 2010-2012 **Howden (CIA)**, Stinear (CIB), Davies (CIC). NHMRC Project Grant. “Molecular Mechanisms of Low-Level Vancomycin Resistance in *S. aureus*.” (\$433,072)
- 2011-2013 **Howden (CIA)**, Peleg (CIB), Stinear (CIC). NHMRC Project Grant. “Understanding Virulence in *Staphylococcus aureus* and Impacts on Host Response.” (\$555,048)
- 2011-2013 Stinear (CIA), **Howden (CIB)**, Seemann (CIC). NHMRC Project Grant. “Molecular basis for the increased virulence of community acquired *Staphylococcus aureus*.” (\$414,286)
- 2012-2014 **Howden (CIA)**, Stinear (CIB), Seemann (CIC), NHMRC Project Grant. “Understanding the contribution of sRNAs to Antibiotic Resistance in *S. aureus*.” (\$565,950)
- 2012-2014 Johnson (CIA), Stinear (CIB), **Howden (CIC)**, Seemann (CID), Grayson (CIE). NHMRC Project Grant “Genomic approaches to understand and control the emergence of vancomycin resistant *Enterococcus faecium* in Australia.” (\$729,924)
- 2012-2015 **Howden (CIA)**. NHMRC Career Development Fellowship. Understanding and combating bacterial infections. (\$195,540)
- 2013-2015 Stinear (CIA), **Howden (CIB)**, Seemann (CIC). NHMRC Project Grant. “Understanding the role of the essential regulator WalKR in *Staphylococcus aureus*.” (\$536,518)
- 2013-2015 Peleg (CIA), **Howden (CIB)**. NHMRC Project Grant. “Pathogenic consequences and mechanistic insights of daptomycin resistance in *Staphylococcus aureus*.” (\$521,972)
- 2014-2016 **Howden (CIA)**, Peleg (CIB), Stinear (CIC), Seemann (CID). NHMRC Project Grant. “Understanding how bacteria cause persistent infection.” (\$661,000)
- 2015-2017 Stinear (CIA), **Howden (CIB)**, Seemann (CIC), Johnson (CID). NHMRC Project Grant. “Dissecting the molecular basis for emerging alcohol tolerance in VRE.” (\$804,710)
- 2015-2019 Davis (CIA), Tong (CIB), Paterson (CIC), Fowler (CID), **Howden (CIE)**... “NHMRC Project Grant. CAMERA: combination antibiotic treatment for Methicillin Resistant *S. aureus* Bacteraemia – a randomized controlled trial “ (\$1,113,530)
- 2016-2019 Stinear, Pidot, Seemann, **Howden (CID)**. NHMRC Project Grant. New antibiotics from old microbes. MHMRC Project Grants (\$1,005,912)
- 2016-2020 Sorrell, Sintchenko, Cheng, Gilbert, Holmes, **Howden (CIF)**, Smith, Coiera, Iredell, Jones. NHMRC Centre for Research Excellence. Protecting the Public from Emerging Infectious Diseases (CREID). (\$2,500,000).
- 2016-2020 **Howden (CIA)**. NHMRC Practitioner Fellowship. Improving prevention, tracking and treatment of major human bacterial pathogens. (\$467,960)
- 2017-2019 **Howden (CIA)**, Kirk, Williamson, Seemann, French. NHMRC Project Grant. A new genomic frontier for foodborne disease investigation in Australia. (\$750,520)

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- 2018-2022 **Howden (CIA)**, Stinear, Williamson, McVernon, Kirk, Stephens, Fairley, Seemann, Ingle. NHMRC Partnership Grant. An evidence based framework for establishing public health microbial genomics in Australia. (\$2,498,000)
- 2018-2020 Peleg, **Howden (CIB)**, Shen. NHMRC Project Grant. Antibiotic resistance and host immune evasion in *S. aureus*. (\$644,426)
- 2019-2021 **Howden (CIA)**, Stinear, Seemann, Carter. Understanding the mechanisms of gastrointestinal colonisation with vancomycin-resistant *E. faecium* (VRE). NHMRC Project Grant. (\$829,220)
- 2020-2021 Lewin, **Howden**, Stinear, Williamson, Catton, Monk, Guerillot, Lee, Sherry, Bond. COVID-19 Strategic Planning and Delivery of Testing. MRFF Grant (\$2,699,278)
- 2021-2025 **Howden**. Genomics for combating antimicrobial resistant bacterial pathogens. NHMRC Investigator Grant (\$2,027,364)
- 2020-2021 Rawlinson, **Howden**, Sintchenko, Jennison, Williamson, Seemann, Duchene, Kelaher. Tracking COVID-19 in Australia using Genomics. NHMRC MRFF CRR (\$3,269,101)

Other Research Funding

- 2003 **Howden (CIA)**, Davies (CIB). *Staphylococcus aureus* Microarray Grant, The Institute for Genomic Research, Rockville, MD (value, ~USD\$15,000)
- 2005 Johnson (CIA), **Howden (CIB)**. “*Staphylococcus aureus* Complete Genome Sequencing”, Austin Hospital Medical Research Foundation (\$30,000)
- 2005 Bennett (CIA), Johnson (CIB), Coombs (CIC), Wood (CID), **Howden (CIE)**. MRGS (University of Melbourne) “*Staphylococcus aureus* in the Community” (\$30,000)
- 2007 **Howden (CIA)**. “Understanding PVL production in Australian isolates of community-acquired MRSA”. Royal Australasian College of Physicians, CSL Fellowship (\$25,000)
- 2008 **Howden (CIA)**, Johnson (CIB), Wines (CIC). “Nasal secretory IgA responses as immune correlates of carriage of hospital acquired methicillin resistant *Staphylococcus aureus* (HA-MRSA)”, Austin Hospital Medical Research Foundation (\$26,920)
- 2009 **Howden (CIA)**, Chua (CIB). “Understanding virulence in Australian CA-MRSA”, Austin Hospital Medical Research Foundation (\$17,500)
- 2010 **Howden (CIA)**, Chua (CIB), Stinear (CIC). “Understanding why a new Australian strain of Golden Staph is causing severe community infections”. CASS Foundation, (\$40,000)
- 2011 **Howden (CIA)**. “Using Genomics to Understand the Emergence of a New Strain of Vancomycin-Resistant Enterococcus (VRE) at Austin Health” Austin Hospital Medical Research Foundation, (\$20,000)
- 2012 Hugenholtz (CIA), Stinear (CIB), Tyson (CIC), **Howden (CID)**, Walker (CIE), Robins-Browne (CIF), Schembri (CIG), Sly (CIH), Hartland (CII), Moreau

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- (CIJ). "A high-throughput screening and sequencing facility for single cell genomics" ARC LIEF Grant (\$380,000)
- 2013 **Howden (CIA)**. Genome Sequencing of *Staphylococcus aureus* bacteraemia isolates from the VANESSA study. Austin Medical Research Foundation, (\$20,000)
- 2014 Kwong, **Howden (CIB)**, Mahoney, Johnson. Metagenomic analysis of whole genome sequencing to aid diagnosis and antimicrobial treatment of culture-negative suspected infections in a tertiary hospital. Austin Medical Research Foundation (\$15,000)
- 2015-2018 Stevenson, Browning, Firestone, Beilin, **Howden (CIE)**. Reduction of antibiotic usage in the commercial pig industry. ARC Linkage. (\$191,400)
- 2016-2018 Rashid, Booy, **Howden (CIC)**, Heron, Barasheed. Impact of conjugate versus polysaccharide quadrivalent ACWY vaccine on meningococcal carriage among Hajj pilgrims. Qatar Medical Research Foundation (\$729,534).
- 2016 Trott, Abraham, Coombs, Paton, Iredell, Norris, Schembri, Gibson, **Howden (CII)**, Garg, Venter, Shaban. High-throughput technology targeting antimicrobial resistance in animals. ARC LIEF (\$510,000).
- 2017-2018 Kwong, **Howden (CIB)**. Metagenomics for the diagnosis of infectious diseases. CASS Foundation Grant (\$55,000)
- 2017-2018 **Howden and Grayson (Co-PIs)**. Melbourne Genomic Health Alliance Flagship Project. Using genomics to track and prevent superbugs (\$1,000,000).
- 2020-2022 **Howden and Buising (Co-PIs)**. Mitigating the Threat of Antimicrobial Resistance in Pacific Island Countries. DFAT CHS Pacific Infectious Diseases Program (\$4,498,842)
- 2020 **Howden and Buising (Co-PIs)**. Laboratory support for Diagnosis of COVID-19 in Pacific Island Countries. DFAT CHS Pacific Infectious Diseases Program (\$527,399)

Publications:**Journal Articles**

1. **Howden BP**, Richards MJ. The efficacy of continuous infusion flucloxacillin in home therapy for serious staphylococcal infections and cellulitis. *J Antimicrob Chemother.* 2001;48:311-4.
2. **Howden BP**, Grayson ML. Hospital-in-the-home treatment of infectious diseases. *Med J Aust.* 202;176:440-5.
3. **Howden BP**, Slavin MA, Schwarer AP, Mijch AM. Successful control of disseminated *Scedosporium prolificans* infection with a combination of voriconazole and terbinafine. *Eur J Clin Microbiol Infect Dis.* 2003;22:111-3.
4. **Howden BP**, Michaelides A, Spelman DW, Spencer A, Schwarer AP, Wesselingh S, Kotsimbos TC. Cytomegalovirus viral load monitoring after allogeneic bone marrow transplantation in patients receiving antiviral prophylaxis. *Bone Marrow Transpl.* 2003;32:795-800.

5. **Howden BP**, Stuart RL, Tallis G, Bailey M, Johnson PD. Treatment and outcome of 104 hospitalized patients with legionnaires' disease. *Int Med J*. 2003;33:484-8.
6. Charles PG, Ward PB, Johnson PD, **Howden BP**, Grayson ML. Clinical features associated with bacteremia due to heterogeneous vancomycin-intermediate *Staphylococcus aureus*. *Clin Infect Dis*. 2004;38:448-51.
7. **Howden BP**, Ward PB, Charles PG, Korman TM, Fuller A, du Cros P, Grabsch EA, Roberts SA, Robson J, Read K, Bak N, Hurley J, Johnson PD, Morris AJ, Mayall BC, Grayson ML. Treatment outcomes for serious infections caused by methicillin-resistant *Staphylococcus aureus* with reduced vancomycin susceptibility. *Clin Infect Dis*. 2004;38:521-8.
8. **Howden BP**, Johnson PD, Charles PG, Grayson ML. Failure of vancomycin for treatment of methicillin-resistant *Staphylococcus aureus* infections. *Clin Infect Dis*. 2004;39:1544.
9. **Howden BP**, Vaddadi G, Manitta J, Grayson ML. Chronic falciparum malaria causing massive splenomegaly 9 years after leaving an endemic area. *Med J Aust*. 2005;182:186.
10. **Howden BP**, Ward PB, Johnson PD, Charles PG, Grayson ML. Low-level vancomycin resistance in *Staphylococcus aureus*--an Australian perspective. *Eur J Clin Microbiol Infect Dis*. 2005;24:100-8.
11. Charles PG, **Howden BP**, Ward PB, Bishop EJ, Johnson PD, Grayson ML. Accurate assessment of heterogeneous vancomycin-intermediate *Staphylococcus aureus* nasal carriage. *Clin Infect Dis*. 2005;41:1071-2.
12. **Howden BP**. Recognition and management of infections caused by vancomycin-intermediate *Staphylococcus aureus* (VISA) and heterogenous VISA (hVISA). *Int Med J*. 2005;35 Suppl 2:S136-40.
13. Mitchell DH, **Howden BP**. Diagnosis and management of *Staphylococcus aureus* bacteraemia. *Int Med J*. 2005;35 Suppl 2:S17-24.
14. **Howden BP**, Charles PG, Johnson PD, Ward PB, Grayson ML. Improved outcomes with linezolid for methicillin-resistant *Staphylococcus aureus* infections: better drug or reduced vancomycin susceptibility? *Antimicrob Agents Chemother*. 2005;49:4816.
15. **Howden BP**, Grabsch EA, King H, Graham M, Johnson PD, Korman TM, Grayson ML, Mayall BC. Community and health-care associated non-multiresistant methicillin-resistant *Staphylococcus aureus* in Victoria. *Med J Aust*. 2005;183:548.
16. Chu P, **Howden BP**, Jones S, Fell G, Roberts A. Once bitten, twice shy: an unusual case of a mycotic aortic aneurysm. *ANZ J Surg*. 2005;75:1024-6.
17. Bishop E, Melvani S, **Howden BP**, Charles PG, Grayson ML. Good clinical outcomes but high rates of adverse reactions during linezolid therapy for serious infections: a proposed protocol for monitoring therapy in complex patients. *Antimicrob Agents Chemother*. 2006;50:1599-602.
18. **Howden BP**, Grayson ML. Dumb and dumber--the potential waste of a useful antistaphylococcal agent:emerging fusidic acid resistance in *Staphylococcus aureus*. *Clin Infect Dis*. 2006;42:394-400.
19. Johnson PD, **Howden BP**, Bennett CM. 2006. *Staphylococcus aureus*: a guide for the perplexed. *Med J Aust*. 2006;184:374-5.
20. **Howden BP**, Johnson PD, Ward PB, Stinear TP, Davies JK. Isolates with low-level vancomycin resistance associated with persistent methicillin-resistant *Staphylococcus aureus* bacteremia. *Antimicrob Agents Chemother*. 2006;50:3039-47.

21. Walton A, **Howden BP**, Grayson ML, Korman TK. Continuous infusion penicillin home-based therapy for serious infections due to penicillin-susceptible pathogens. *Int J Antimicrob Agents*. 2007;29:544-8.
22. Eisen DP, Stubbs J, Spilsbury D, Carnie J, Leydon J, **Howden BP**. Low mannose-binding lectin complement activation function is associated with predisposition to Legionnaires' disease. *Clin Exp Immunol*. 2007;149:97-102.
23. Bishop EJ, **Howden BP**. Treatment of *Staphylococcus aureus* infections: new issues, emerging therapies and future directions. *Expert Opin Emerg Drugs*. 2007;12:1-22.
24. **Howden BP**, Smith DJ, Mansell A, Johnson PD, Ward PB, Stinear TP, Davies JK. 2008. Different bacterial gene expression patterns and attenuated host immune responses are associated with the evolution of low-level vancomycin resistance during persistent methicillin-resistant *Staphylococcus aureus* bacteraemia. *BMC Microbiol*. 2008;8:39.
25. **Howden BP**, Stinear TP, Allen DL, Johnson PD, Ward PB, Davies JK. Genomic analysis reveals a point mutation in the two-component sensor gene *graS* that leads to intermediate vancomycin resistance in clinical *Staphylococcus aureus*. *Antimicrob Agents Chemother*. 2008;52:3755-62.
26. Grabsch EA, Ghaly-Derias S, Gao W, **Howden BP**. Comparative study of selective chromogenic (chromID VRE) and bile esculin agars for isolation and identification of vanB-containing vancomycin-resistant enterococci from feces and rectal swabs. *J Clin Microbiol*. 2008;46:4034-6.
27. **Howden BP**, Stinear TP, Davies JK. Complete Genome Sequencing of *Staphylococcus aureus*: insights into virulence and antimicrobial resistance. *Microbiology Australia*. 2008;29:115-20.
28. Poudyal A, **Howden BP**, Bell JM, Gao W, Owen RJ, Turnidge JD, Nation RL, Li J. In vitro pharmacodynamics of colistin against multidrug-resistant *Klebsiella pneumoniae*. *J Antimicrob Chemother*. 2008;62:1311-8.
29. Stewardson AJ, Holmes NE, Ellis DH, **Howden BP**. Cutaneous zygomycosis caused by *Saksenaea vasiformis* following water-related wound in a 24-year-old immunocompetent woman. *Mycoses*. 2009;52:547-9.
30. Horne KC, **Howden BP**, Grabsch EA, Graham M, Ward PB, Xie S, Mayall BC, Johnson PD, Grayson ML. Prospective comparison of the clinical impacts of heterogeneous vancomycin-intermediate methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-susceptible MRSA. *Antimicrob Agents Chemother*. 2009;53:3447-52.
31. Kelley PG, Grabsch EA, **Howden BP**, Gao W, Grayson ML. Comparison of the Xpert™ MRSA Assay, BD GeneOhm™ MRSA Assay and Culture for the Detection of Nasal and Cutaneous Groin Colonization by Methicillin-Resistant *Staphylococcus aureus* (MRSA). *J Clin Microbiol*. 2009;47:3769-72.
32. Chua K, **Howden BP**. Treating Gram positive infections: Vancomycin update and the whys, wherefores and evidence base for continuous infusion of anti-gram positive antibiotics. *Curr Opin Infect Dis*. 2009;22:525-34.
33. Turnidge JD, Kotsanas D, Munckhof W, Roberts S, Bennett CM, Nimmo GR, Coombs GW, Murray RJ, **Howden B**, Johnson PD, Dowling K; Australia New Zealand Cooperative on Outcomes in Staphylococcal Sepsis. *Staphylococcus aureus* bacteraemia: a major cause of mortality in Australia and New Zealand. *Med J Aust*. 2009;191:368-73.

34. Tobias NJ, Seemann T, Pidot SJ, Porter JL, Marsollier L, Marion E, Letournel F, Zakir T, Azuolas J, Wallace JR, Hong H, Davies JK, **Howden BP**, Johnson PD, Jenkin GA, Stinear TP. Mycolactone gene expression is controlled by strong SigA-like promoters with utility in studies of *Mycobacterium ulcerans* and buruli ulcer. *PLoS Neglect Trop Dis*. 2009;3:e553.
35. Taylor D, Taylor S, Ho J, Cabalag M, Hijazi R, **Howden BP**, Charles PG. Effect of Nebulised Acetylcysteine on Sputum Quality and Diagnostic Yield. *J Hosp Pharm*. 2009;39:24-27.
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219. Lane CR, Brett J, Schultz M, Gorrie C, Stevens K, Cameron D, .. **Howden BP**. Search and Contain: Impact of an integrated genomic and epidemiological surveillance and response program for control of carbapenemase-producing *Enterobacterales*. *Clin Infect Dis*. 2020 [In press].

Research Reports Commissioned by Government

1. Sait M, Mercoulia K, Easton M, Valcanis M, Barnden J, Gregory J, Stephens N, **Howden BP**. Analysis of Multi-locus variable number of tandem repeat analysis (MLVA) for the detection of sporadic and outbreak-associated Salmonella enterica serovar Typhimurium isolates obtained over a 5-year period from human and food sources in Victoria, Australia. Report Commissioned by Victorian Government, Australia, 2015.
2. Williamson DA, **Howden BP**, Stinear TP, Seemann T, Kirk M. Establishing Communicable Diseases Genomics in Australia. Report Commissioned by Commonwealth Government, Australia, 2017.
3. Gonçalves da Silva A, Williamson D, Seemann T, Ballard S, Stinear T, Jennison A, Bates J, Sintchenko V, **Howden BP**. Data sharing to improve decision making in public health: a case for Australian Public Health Laboratories. Report Commissioned by Commonwealth Government, Australia, 2018.

Book Chapters

1. Grayson ML, **Howden BP**. Antibiotics. *In Infectious Diseases: A clinical approach* 3rd Edition. IP Communications. 2010.
2. **Howden BP**. Linezolid. *In Kucers' The Use of Antibiotics* 6th Ed. ASM Press. 2010.
3. Chua K, **Howden BP**. Metronidazole. *In Kucers' The Use of Antibiotics* 6th Ed. ASM Press. 2010.
4. **Howden BP**, Grayson ML. 2006. Home therapy with antibiotics. *In Cohen and Powdely Infectious Diseases*. Elsevier. Second edition. 2004.
5. Sparham S and **Howden BP**. Linezolid. *In Kucers' The Use of Antibiotics* 7th Ed. ASM Press. 2016.

Selected Invited Conference/Meeting Presentations:**International**

1. **Symposium presentation** Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). "Is hVISA Clinically Important?" Chicago, USA, 2007
2. **Symposium presentation** International Symposium on Staphylococci and Staphylococcal Infections (ISSI). "hVISA - Mechanisms and Clinical Impact". Cairns, Australia, 2008
3. **Symposium presentation** Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). "Continuous Infusion Beta-Lactams for Treatment of gram Positive Infections". San Francisco, USA, 2009
4. **Symposium presentation** International Congress on Chemotherapy (ICC). "Clinical Impact of Reduced Glycopeptide Susceptibility in *S. aureus*". Toronto, Canada, 2009.
5. **Symposium presentation** International Symposium on Staphylococci and Staphylococcal Infections (ISSI). "Molecular Mechanisms and Virulence Impacts of Vancomycin Resistance in *S. aureus*", Bath, UK, 2010
6. **Symposium presentation** Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). "hVISA- Should we Worry?" Chicago, USA, 2011
7. **Symposium presentation** Network on Antimicrobial Resistance in *S. aureus* (NARSA, NIH). "The ST93 CA-MRSA from Australia". Reston, VA, USA, 2011
8. **Symposium presentation** International Society for Staphylococci and Staphylococcal Infections (ISSI). "Vancomycin MIC and outcome of staphylococcal infections." Lyon, France, 2012
9. **Symposium presentation** International Symposium on Antimicrobial Agents and Resistance. "Vancomycin resistance in *S. aureus*." Kuala Lumpur, Malaysia, 2013
10. **Symposium presentation** Society for General Microbiology (SGM). "In vivo evolution of *S. aureus* during persistent infection." Liverpool, UK, 2014
11. **Symposium presentation** Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). "Difficulties in controlling *vanB E. faecium* in hospitals as revealed through genomics." San Diego, USA, 2015.
12. **Symposium presentation** Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). "Therapeutic Options for Treating hVISA, VISA and VRSA infections" San Diego, USA, 2015

Curriculum Vitae**Professor Benjamin Howden**

13. **Keynote presentation** Asia Pacific Congress on Microbiology and Infection. “The role of microbial genomics in public health and clinical microbiology” Melbourne, 2016.
14. **Symposium presentation** Asia Pacific Congress on Microbiology and Infection. “The KPC Outbreak in Victoria” Melbourne, 2016
15. **Keynote presentation** European Congress on Clinical Microbiology and Infectious Diseases. “Vancomycin and *Staphylococcus aureus*”, Amsterdam, 2016.
16. **Invited Speaker** Centres for Diseases Control (CDC) Seminar Program “Applying genomics to disease surveillance and outbreak investigation – tales from down under” Atlanta, USA, 2017
17. **Keynote presentation** Asia Pacific Congress on Microbiology and Infection. “Applications of next generation sequencing in clinical and public health microbiology” Hong Kong, 2018
18. **Symposium presentation** European Congress on Clinical Microbiology and Infectious Diseases. “Global spread of MDR *S. epidermidis*” Amsterdam, 2019.
19. **Session Chair.** Precision infectious diseases genomics. ASM Microbe AGM, San Francisco, June 2019.
20. **Symposium presentation** Gordon Research Conference on Staphylococcal Infections. “Precision medicine and *S. aureus* genomics” Barcelona, 2019.
21. **Presentation** at WHO WPR AMR Meeting on AMR Surveillance for the Western Pacific, Manila 2019
22. **Symposium Presentation (invited).** Decennial Conference at CDC, USA. Genomics for infection control – what every clinician needs to know. March, 2020
23. **Think Tank Presentation (invited)** – United States Centres for Diseases Control (CDC) think Tank on the role of genomics for hospital infection prevention and control (Atlanta, 2020)

National

1. **Symposium presentation** BacBath8. Australian Bacterial Pathogenesis Conference. “Microarray analysis of hVISA”. Queensland, Australia, 2005
2. **Symposium presentation** Infectious Diseases Pharmacists of Australia National Meeting. “Staphylococcal Infections”. Lorne, 2005.
3. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference. “Preserving Anti-staphylococcal Antibiotics”. Sydney, 2006
4. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference. “SNPs and Microarrays in Resistance”. Melbourne, 2007
5. **Symposium presentation** Australian Society for Microbiology (ASM) Annual Scientific Conference. “Infection control implications of hVISA”. Melbourne, 2008
6. **Symposium presentation** Australian Society for Microbiology (ASM) Annual Scientific Conference. “Vancomycin Resistance in *S. aureus*”. Perth, 2009
7. **Symposium presentation** Australasian Society for Infectious Diseases (ASID) Annual Scientific Conference. “Using Microarrays and Genome Sequencing for Investigating Resistant Pathogens”. Hunter Valley, NSW, 2009
8. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference. “Using Genomics to Understand *S. aureus*”. Melbourne, 2009

9. **Symposium presentation** Society of Hospital Pharmacists of Australia Annual Scientific Conference. "Staphylococcal and Enterococcal Infections in Hospitals". Melbourne, 2010
10. **Symposium presentation** Australian Society for Infectious Diseases (ASID) Annual Scientific Conference. "Using Genomics to Understand Antibiotic Resistance in *S. aureus*". Lorne, 2011
11. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference. "The Genome and Virulence of ST93 CA-MRSA". Melbourne, 2011
12. **Symposium presentation** Molecular Microbiology Meeting. "Whole Bacterial Genome Sequencing and Vancomycin resistance in *S. aureus*." Sydney, Australia, 2014
13. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference. "Bacterial Genome Sequencing and Clinical Microbiology". Melbourne, Australia, 2014
14. **Symposium presentation** Australian Society for Microbiology Annual Scientific Meeting. "Using genomics to understand hospital pathogens". Melbourne, 2014.
15. **Frank Fenner Award Lecture.** Australian Society for Microbiology (ASM) 2014, Melbourne
16. **Symposium presentation** Illumina Satellite Symposium, ASM 2014, Melbourne. "Genomic approaches to understanding emerging resistance in gram-positive cocci"
17. **Keynote presentation** Laboratory Diagnosis and Surveillance of Drug-Resistant Infections Symposium, CIDM-PH, Westmead, 2014. "Genomic approaches to understanding emerging resistance in gram-positive cocci"
18. **Howard Florey Oration,** Australian Society for Antimicrobials Annual Scientific Conference, Brisbane, 2015 "Vancomycin and *Staphylococcus aureus* – a complex relationship"
19. **Symposium presentation** Australian Society for Antimicrobials (ASA) Annual Scientific Conference, Brisbane 2015. "Self generating vancomycin-resistant enterococci"
20. **Frank Fenner Award Lecture.** Australasian Society for Infectious Diseases (ASID) Annual Scientific Meeting 2015, Auckland.
21. **Symposium presentation** Australasian Society for Infectious Diseases (ASID) Annual Scientific Meeting, Auckland 2015. "The routine use of WGS in clinical diagnostics: fact or fantasy?"
22. **Keynote presentation,** Combined Biological Sciences Meeting, Perth, 2015. "The use WGS in clinical and public health microbiology"
23. **Symposium presentation** Australasian College for Infection Prevention and Control Conference, Tasmania, 2015.
24. **Convener** Advances in Microbial Genomics for Public Health and Clinical Microbiology 1 day Symposium, Melbourne, 2016
25. **Symposium presentation** Australasian Society for Infectious Diseases (ASID) Annual Scientific Meeting, "Understanding the outbreak of carbapenem-resistant bacteria in Victoria" Tasmania, 2016
26. **Symposium presentation** Royal Australasian College of Physicians Annual Scientific Meeting, "Antimicrobial resistance – a major public health threat of our time" Adelaide, 2016

27. **Symposium presentation** Australian Institute of Food Science and Technology (AIFST) Annual Scientific Meeting, “Should we sequence everything – genomics and diseases control” Brisbane, 2016
28. **Symposium presentation** Communicable Diseases Control Conference Genomics Workshop, “Implementation of Public Health Surveillance of CPE in Victoria” Melbourne, 2017
29. **Symposium presentation** Australian Society for Microbiology Annual Scientific Meeting. “Genomics in clinical laboratories – a view to the future”. Hobart, 2017
30. **Invited Speaker** National Neisseria Network Annual Meeting “Genomic insights into the meningococcal W strain” Hobart, 2017
31. **Convener and presenter** Genomics and Antimicrobial Resistance Half-Day Symposium, National AMR Forum, The University of Melbourne, Nov, 2018.
32. **Symposium presentation** International Conference on Food Analysis. “Emerging and persistent foodborne pathogens – using genomics for public health action”. Melbourne, 2018
33. **Symposium presentation** Update on Australia’s progress on AMR. ASA, Sydney, February, 2019
34. **Panel member** Translating genomics into practice. Melbourne Genomics Health Alliance Translating Genomics, Transforming Care Conference, Melbourne, Nov 2019.