

Profile

Keryn Christiansen: a household name in microbiology

There are good and bad points to living in the world's most isolated city. For Keryn Christiansen, Head of the Department of Microbiology and Infectious Diseases at the Royal Perth Hospital, Perth has been a fantastic place to raise her family and has provided a unique opportunity to study staphylococcal epidemiology in a remote Australian location. It has also left her feeling at times professionally isolated, yet inspired her to take on a range of national and international roles that have made her a household name in microbiology.

It was during her second year at the University of Western Australia that she met her soon-to-be husband, immunologist Frank Christiansen. The pair married before their final year of study, and Christiansen made it through the prerequisite 50-week registration training period for doctors, a matter of days before giving birth to the first of their two children. Her first taste of the wider world came later, when she and her husband studied at New York's Memorial Sloan-Kettering Cancer Center. Pharmacokinetics and fungal infections were among her specialist subjects while in the USA. Christiansen finished her training and became a fellow of the Royal College of Pathologists, subspecialising in microbiology. Within a year she became a consultant at the Royal Perth Hospital, which has been her base ever since. But having experienced New York, the pace of life in Perth was suddenly inadequate, and she decided she needed to broaden her horizons.

Antimicrobial drugs continued to fascinate Christiansen, who observes that "We humans have always been one step ahead of the game due to new antibiotics coming through. But now, drug companies don't see new antibiotics as profitable and the pipeline is drying up." Through her career she has seen various antibiotic-resistant pathogens take hold in hospitals and communities across Australia, although her home state of Western Australia does not have hospital-endemic methicillin-resistant *Staphylococcus aureus* (MRSA) like the country's other States and Territories.

While the steady increase in antibiotic resistance worries Christiansen, she believes the past two decades have also seen positive changes, such as a huge increased awareness about infection control in hospitals and health systems. As a member of the Australian Drug Evaluation Committee, the body that regularly advises the Australian Government's Therapeutic Goods Administration, she has helped to shape national antibiotic-use guidelines and also advises drug companies involved in antibiotic production. Alongside these efforts, Christiansen has worked to forge the professional community of microbiologists in Australia. Together with colleague John Turnidge, of the University of Adelaide, she founded the Australian Society for Antimicrobials (ASA) in 1999; they both subsequently served as president of a society that now boasts some 600 members.

Around the time that Turnidge and Christiansen were setting up the ASA, vancomycin-resistant *Enterococcus* (VRE) infections emerged in livestock in Europe and the USA, leading to investigations of prevalence in Australia. Christiansen was part of the antibiotic resistance committee that was set up to advise the government and other bodies on appropriate antibiotic use. This was good preparation for an unexpected VRE outbreak at the Royal Perth Hospital in 2001, which Christiansen and colleagues were able to contain in a military style operation that saw huge numbers of patients rapidly screened, segregated, and treated.

Internationally, Christiansen jointly ran the International Congress on Chemotherapy in the late 1990s, and remains a council member for the Western Pacific Society for Chemotherapy and Infectious Diseases. Later, her activities attracted the attention of the International Society of Infectious Diseases (ISID), which invited her on to its council. An executive position soon followed before a 2-year stint as president in 2004—she was the first woman to hold the role. Her work with ISID expanded her remit to the developing world, where antibiotic resistance is also rampant due to counterfeit drugs, short course-duration, and poor sanitation leading to huge resistance selective pressure. The tools to fight this epidemic are scarce in those nations. "It's vital to help developing countries with grants, training, and travel costs", Christiansen told *The Lancet*. "ISID holds its meetings in locations where as many scientists from developing nations as possible can attend." She adds that to truly combat the world's resistance problem, countries like India and China must be fully brought on board, yet neither country seem to acknowledge it as a priority. "Keryn is a true leader in the international infectious diseases community", says Daniel Lew, from the University of Geneva, Switzerland, and current president of ISID. He adds that "She is extremely generous in sharing her expertise and efforts with practitioners from all over the world, particularly those most disadvantaged."

Christiansen hopes her legacy to Western Australia is her input into ensuring that Perth's new Fiona Stanley Hospital is an 80% single-bed unit. "The government here has always understood it's better to spend a bit to stop something now, than pay much more for it later", she says. Her main objective before she packs away her microscope is to see the establishment of one overarching body in Australia—covering clinical and veterinary antibiotic use—to deal with the threat of resistance before it's too late. She warns that "The world is now at a critical juncture where action must be taken, otherwise infections resistant to most or all antibiotics could take hold everywhere."

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See [World Report](#) page 1823