Cheryl Jones: cracking mysteries in paediatric infection

Cheryl Jones’ upbringing by parents in the hospitality industry, while hectic and fun, could not have been more different from her current life as a paediatric infectious diseases clinician and researcher. Her unrelenting schedule sees her combine her roles as Professor of Paediatrics at the University of Sydney (where she is also Deputy Dean), with ward rounds at the Children’s Hospital at Westmead, Sydney. She is also very active in advocacy as Vice President of the Australasian Society of Infectious Diseases (ASID)—the first paediatrician to hold that post.

At a recent school reunion, old school friends reminded her that she had always “wanted to be a doctor who worked with kids”. And so it came to pass. Her education at the University of Tasmania saw her interest in paediatrics intensify, and her training at the Royal Alexandra Hospital in Sydney came while paediatric infectious diseases were becoming their own specialty. Working with long-term mentors David Isaacs and Margaret Burgess, she learnt of the effect diseases like rubella could still have despite Australia’s growing affluence. She also loved the welcoming non-hierarchical environment in the children’s hospital.

In Sydney and during training at Boston Children’s Hospital Infectious Diseases Department (MA, USA), Jones saw the full gamut of infectious diseases, including pneumococcal, bacterial sepsis, meningococcal, and other brain, heart, and lung infections. Doing her PhD, working with virologist David Knipe at Harvard University, she helped develop safer vaccines for herpes simplex virus (HSV). “Cheryl showed a unique combination of skills as a clinician and as a basic science researcher from the time she arrived at my lab”, recalls Knipe. “She expanded our genital herpes vaccine research into new animal model systems, and her research continued to move in novel directions in her own lab in Australia.”

“Due to Australia’s vast geography, I made lots of trips in helicopters or in the back of ambulances to rural New South Wales to retrieve sick children to the children’s hospital in Sydney. We would see conditions like Haemophilus influenzae type b which could cause epiglottis, a condition that can be devastating in a rural setting when emergency airway management was required. Vaccination saw these cases all but disappear”, says Jones. She is also proud that Australia continues to lead globally when it comes to vaccine-preventable diseases. “My own son is to be one of the first wave of boys in the country to receive the HPV [human papillomavirus] vaccine already available for girls”, she says. “This initiative should further cut prevalence of HPV-related cancers and genital warts.”

Jones is mindful that there are many mysteries still to solve. She is involved in a national study of the causes of encephalitis, which continues to affect hundreds of children annually in Australia and many more globally. “In about half of encephalitis cases, we can’t identify an infectious or non-infectious cause”, she says. Vaccination has largely removed cases related to measles. However, cases of influenza-related encephalitis and many cases of unknown cause continue to cause problems. “It appears children in all socioeconomic groups are vulnerable”, says Jones. “Our study will particularly search for new or emerging infections as potential causes. We also need to develop national guidelines for diagnosing encephalitis,” she adds.

Jones is a world authority on mother-to-child infections, and her other major projects have included tracking newborn HSV trends during the past two decades. Although the infection remains rare (one in 30 000-50 000 livebirths), Jones’ team has identified adolescent mothers as most at risk of passing this virus to their baby and will soon publish new research. “We need to target this age group for preventive measures and better general health. There also needs to be better recognition of HSV infection at delivery,” she says.

Another mystery on Jones’s agenda is the potential link between cytomegalovirus (CMV) and cerebral palsy (CP). Mother-to-child transmission of CMV occurs in about one in 200 pregnancies, and, although most babies remain healthy, about 10% have a range of problems than can include brain, hearing, and vision problems, in addition to CP. “A major issue is that by the time cerebral palsy is diagnosed, it can be too late to diagnose whether CMV was there at that time.” Working with the Australian Cerebral Palsy Alliance, Jones’ team has identified that CMV might be associated with severe forms of disease. To confirm this association they are doing a study to look for CMV in blood spots from neonatal screening cards of patients with cerebral palsy over the past 10 years. She hopes that some cases might eventually be prevented by an effective CMV vaccine or early postnatal treatment.

Jones believes that the challenges facing paediatric infection control in the future will continue to include the massive burden of Staphylococcus aureus, resistant Gram-negative bacteria infections, pandemic influenza, enteroviruses, and several brain infections for which understanding remains limited. More generally, Jones wants training programmes to develop more clinician-researchers, whom she feels there are too few of.

“Cheryl Jones is an outstanding clinician-scientist whose research spans the full gamut of population health, clinical, and laboratory-based research”, says Kathryn North, Murdoch Children’s Research Institute at the Royal Children’s Hospital, Melbourne, VIC, Australia. North adds that “Cheryl is dedicated to, and passionate about, nurturing the careers of postdoctoral students and early career researchers and has developed formal mentoring programs that have been widely adopted.”

Tony Kirby