

# Pediatric Ophthalmology in Australia

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Australia is a modern and prosperous Western country of some 20 million people. Although Australian culture has traditionally been British, immigration during the last 50 years has changed the cultural and social milieu, and Australia is now a successful multicultural European and Asian society. The main cities are Sydney (population of 4 million) and Melbourne (population of 3 million), and three other cities each have a population of more than 1 million.

To gain entry into one of Australia's 10 medical schools, students must achieve extremely high marks in the final year of high school. The medical course lasts 6 years plus 1 year of compulsory internship, but some programs last 5 years with 2 years of internship. An increasing number of medical schools now accept graduate students who perform well on a nationally administered examination and who complete a 5-year course. After completing medical school and a compulsory year of internship, aspiring ophthalmologists typically spend 2 or 3 more years in hospitals on medical and surgical rotations before competing for admission to the 5-year ophthalmology training program. This process is supervised by the Royal Australian and New Zealand College of Ophthalmologists.

Most primary eye care is provided by optometrists and family doctors who refer patients to an ophthalmologist if appropriate. General ophthalmologists are widely distributed and probably perform the majority of pediatric ophthalmology and strabismus care for their communities. Ophthalmologists with recognized training in pediatrics or strabismus are less accessible and in general are associated with the larger institutions in sizeable cities. Most optometrists treat children, and a small number practice as dedicated pediatric optometrists. Two orthoptic schools produce graduates who usually work in an ophthalmologist's office in much the same capacity as an ophthalmic technician does in the United States (rather than in classical orthoptics).

Complex financial and legislative arrangements involving federal and state governments exist for funding and administering health care in Australia. Medicine is prac-

ticed both in the private fee-paying sector and in government funded "free" facilities, and there is much overlap between the private and government sectors. Teaching hospitals are mostly in the state government sector, and it is here that undergraduate and postgraduate medical training takes place and professional prestige resides. The government sector is largely staffed at the senior level by part-time attending consultants who spend most of their time in private practice.

Most of the population undergoes surgery performed at no cost in state government facilities, and all are eligible to use these facilities. Despite the universal availability of these free services, approximately 40% of the population has private insurance that pays for private hospital care. The federal government subsidizes 30% of such insurance to make it more affordable. Some 50% of consultation and surgical fees in private practice are subsidized by the federal Medicare scheme. Pharmaceuticals are subsidized by a different national federal government scheme with a small "top up" (partial recompense for out-of-pocket costs) available from private insurers. Doctors have the right to charge whatever fees they like; however, there is considerable pressure to adhere to recommended fees. If doctors charge only recommended fees, then insured patients have no copayments. However, remuneration for strabismus consultations and surgery is poor when compared with remuneration for, say, cataract treatment.

Pediatric ophthalmology and strabismus developed in Australia as separate clinical and intellectual streams modeled more on the European rather than the American approach. Strabismus has developed in association with eye hospitals (Melbourne and Sydney each have a free-standing one) and pediatric ophthalmology in association with children's hospitals. Each large city has an ophthalmology department as part of the children's hospital. Before the 1970s, these departments were staffed by general (adult) ophthalmologists with an interest in pediatric ophthalmology. Prominent historical figures included Sir Norman Gregg, who in the 1960's recognized the ophthalmic and nonophthalmic features of rubella embryopathy. He shared the Encyclopedia Britannica award for medicine with Dame Kate Campbell of Melbourne, a pediatrician who in 1951 showed that advanced retinopathy of prematurity (ROP) was linked to oxygen toxicity.

In 1969, Frank Bilson headed the clinic at the Royal Children's Hospital in Melbourne where he introduced the indirect ophthalmoscope and the operating microscope to Australian pediatric ophthalmology. Subsequently, he was appointed Professor in Sydney in the late

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1970s, and he became the first academic pediatric ophthalmologist in Australia. His fine oratory, enthusiasm for teaching, and international connections have had a positive influence on pediatric ophthalmology in Sydney and throughout the country.

The first dedicated pediatric ophthalmologist in Australia was Greg Keith, who arrived in Melbourne in the late 1970s having recently published his well-received monograph on genetic eye diseases. He published important articles on ROP, had innovative thoughts on retinoblastoma, and described a novel irrigation–aspiration technique for cataract surgery.

Strabismology, as a discipline separate from pediatric ophthalmology, began with Joseph Ringland Anderson in the 1920s. His 1931 textbook on retinal detachment, his later textbook on vertical strabismus, and his surgical technique for correcting torticollis in congenital nystagmus made him internationally famous. He founded the first orthoptic school in Australia at Alfred Hospital in the 1930s. A contemporary of his was Sir Thomas Travers, whose 1930s monograph on anomalous retinal correspondence and demonstration of the amblyopic scotoma with haploscopic perimetry were well known and were cited in von Noorden's text. Travers introduced adjustable sutures to Melbourne in the 1930s having learned the technique in Europe, but he abandoned the technique in face of local opposition.

In 1969, John Taylor, an acquaintance of Bruno Bagoilini, established the first specialized strabismus clinic in a university hospital in Australia at the Royal Victorian Eye and Ear Hospital in Melbourne. This is the largest such clinic in Australia and the only one suitable for fellowship training. At that time, Bill Gillies from Melbourne was a foundation member of the International Strabismological Association (ISA), and later organized two of its congresses. I am from Melbourne and myself am currently the first vice-president of the ISA. Gillies later published a seminal article suggesting that surgical doses should be modified in patients with different sized globes.

In 1970, Graham Pittar spent some time at Smith Kettlewell in San Francisco and on his return stimulated further interest in strabismus in Sydney, wrote a textbook, and with his generous teaching actively passed his passion for strabismus on to many.

In 1990, the ISA held its 6th Congress in Australia, and this led to the formation of the Australian Squint Club, which held its first meeting in 1991. These annual meetings are an important occasion on the Australian strabismus calendar.

Larry Abel, a doctoral engineer who had worked in eye movement laboratories in America for many years, migrated here in the 1990s and set up a laboratory in Melbourne that now allow us to evaluate congenital nystagmus with expertise equal to that of the best American centers.

Some 20 ophthalmologists in Australia have undergone formal fellowship training in pediatric ophthalmology and/or strabismus. They largely staff the departments of pediatric ophthalmology and strabismus in Australia, which are as follows:

- Royal Children's Hospital in Melbourne: The most internationally prominent member is David Mackey, who is known for his publications on Leber's optic neuropathy and for his ambitious genetic research, e.g., DNA samples on all strabismic individuals, and their relatives, on the island of Tasmania.
- Royal Victorian Eye and Ear Hospital in Melbourne: The large strabismus department there is headed by myself.
- In Sydney, a large pediatric ophthalmology department at Children's Hospital Westmead is headed by Frank Martin.
- In Brisbane, Glen Gole is the Chairman of pediatric ophthalmology at the Children's hospital. He was involved in the original ROP classification. Tim Sullivan has particular expertise in pediatric oculoplastics.

Some of the departments offer fellowship training in pediatrics or strabismus, mostly for overseas candidates. To gain credibility as a subspecialist, most Australian doctors go to the United States or United Kingdom for subspecialty training.

There are important foci of research outside of ophthalmology. Peter Bishop developed a neurophysiology research institute at the Australian National University in the late 1960s, and he wrote the chapter on binocular vision in the early editions of Adler's *Physiology of the Eye*. His department researched stereopsis in cats in a most elegant way. David and Sheila Crewther (a physicist and an optometrist, respectively, now working in the psychology department at La Trobe University in Melbourne) have made many interesting contributions to basic and applied visual physiology.

The spectrum of disease seen in this country is similar to that seen in other western, predominantly white populations. During my own fellowship training at Wills Eye Hospital in Philadelphia, some conditions—such as dissociated vertical deviation bad enough to require surgery and juvenile glaucoma—seemed to be more common in America than what I see in Australia. On the other hand, in Australia I saw certain conditions—such as manifestations of congenital esotropia that cause head tilt and face turn and extreme myopia in children—more frequently than I encountered in the United States. These observations may be caused by differences in genetic pools. The practice of pediatric ophthalmology and strabismus in Australia is otherwise very similar to that practiced in Anglo-American institutions.

The future of pediatric ophthalmology and strabismus in Australia is somewhat uncertain because it attracts few

of the better young ophthalmology graduates, who find other areas of ophthalmology (eg, refractive and cataract surgery) more exciting and financially more attractive.

This is unlikely to change. Optometrists will enthusiastically fill the void in pediatric eye care to the best of their ability.



### An Eye on the Arts – The Arts on the Eye

I have known gentler awakenings. When I came to that late-January morning, the hospital ophthalmologist was leaning over me and sewing my right eyelid shut with a needle and thread, just as if he were darning a sock. Irrational terror swept over me. What if this man got carried away and sewed up my left eye as well, my only link to the outside world, the only window to my cell, the one tiny opening of my diving bell? Luckily, as it turned out, I wasn't plunged into darkness. He carefully packed away his sewing kit in padded tin boxes. Then, in the tones of a prosecutor demanding a maximum sentence for a repeat offender, he barked out: "Six months!" I fired off a series of questioning signals with my working eye, but this man—who spent his days peering into people's pupils—was apparently unable to interpret a simple look. With a big round head, a short body, and a fidgety manner, he was the very model of the couldn't-care-less doctor: arrogant, brusque, sarcastic—the kind who summons his patients for 8:00 a.m., arrives at 9:00, and departs at 9:05, after giving each of them forty-five seconds of his precious time. Disinclined to chat with normal patients, he turned thoroughly evasive in dealing with ghosts of my ilk, apparently incapable of finding words to offer the slightest explanation. But I finally discovered why he had put a six-month seal on my eye: the lid was no longer fulfilling its function as a protective cover, and I ran the risk of an ulcerated cornea.

—Jean-Dominique Bauby (from *The Diving Bell and the Butterfly: A Memoir of Life in Death*)