

The eyes have it

A New Zealand ophthalmologist is spearheading life-changing research. BY SARAH BARNETT

Professor Helen Danesh-Meyer radiates energy. The youngest professor at the University of Auckland, she divides her time between eye surgery, research, academia and parenting. It's hardly surprising when she admits one of the secrets to maintaining her workload is not needing much shut-eye.

Her research has led her to the cutting edge of neuro-ophthalmology, with an international study she spearheaded from Auckland on measuring brain tumours' effects on the optic nerve. A tumour pressing on the nerve can compromise the patient's vision, but until this study, doctors were unable to establish whether the damage would be permanent.

"The best analogy I can think of is if you sleep on your hand and you wake up and your hand's asleep – it doesn't function. If someone were to test it at that time, you wouldn't be able to grab a pen – they'd say, 'Oh my gosh, your hand is dead.' But it actually recovers.

"And the same thing happens to the optic nerve. When it's pushed by a tumour, sometimes the nerve cells go to sleep, and as soon as you surgically remove that compression, the vision comes back."

A patient who was 24 weeks pregnant after several IVF cycles was found to have a tumour pressing on her optic nerve – neurosurgical advice was that surgery had to be fast to help her recover. At 24 weeks, her pregnancy was in danger

during surgery – "what do you do? Do you sacrifice your vision and take the risk of being blind, or do you risk the baby? It was right at the time we were doing the study, and we found her nerve lining was actually very healthy. So we were able to tell the surgeon she was in no immediate danger."

The surgery was delayed until the patient was 34 weeks pregnant, with happy endings all round. "That's very rewarding when you're in a position where your research can quite quickly translate into benefits for patients."

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The study was highlighted in *New Scientist* last year – Danesh-Meyer says she's heard it has "percolated out" to be used internationally. That she could spearhead the study from New Zealand speaks volumes about how much easier it is to collaborate internationally these days, and the strong base we have here – "there's no lack of intelligence and talent".

But even then, Danesh-Meyer says, the geographical reality is tough. "Some of the brightest scientists and researchers I know are here, but we're very separated from the rest of the world. So to go any-

where or to do anything requires a big effort, and because we're small and we're far away, we're often not on their radar, so you have to put yourself on that radar, and offer something different that they can't do there, or an idea. Information is spread easily, but still, if we could move our beautiful islands a little bit closer ..."

She's had offers – from the Wills Eye Hospital in Philadelphia, where she did her fellowship training, and from Johns Hopkins during the brain tumour study, but nothing was ever tempting enough – her daughters were young when she completed her fellowship, "and we wanted to raise them as Kiwis".

Her daughters, now 11 and nine, are the newest generation of a medical family. Danesh-Meyer's parents were doctors – her father a psychiatrist, her mother a paediatrician – and her brother has gone into medicine as well. Husband Michael is a periodontal surgeon. "So when people say, 'You're much more scary than the dentist', I say, 'I'll have to tell my husband!'"

But two surgeons and two children is a lot of juggling: "You have to make friends with your to-do list, because it's always long and it's right there with you. When I sit sometimes and think this is so busy, what would I give up? Nothing – there's nothing I'd give up. I love teaching, love the research and my patient contact, of course, so there's none of those three hats I'd want to compromise. It's just a matter of finding a way to do it."



Helen Danesh-Meyer

About three-quarters of Danesh-Meyer's work is with glaucoma, a disease that robs people of their peripheral vision. Because it can be halted but not reversed, early detection is vital. But this is unlikely, because glaucoma has no symptoms until it's extremely advanced.

At her office at Remuera's Eye Institute, Danesh-Meyer says it's not uncommon at a first appointment for her to have to tell patients they are no longer legally allowed to drive. They'll protest that they can still read the bottom of the eye chart, "and I'll say, 'But if a child ran across the street, you'd no longer see them.'"

This is one of the reasons Danesh-Meyer added to her already formidable workload to become chairwoman of Glaucoma New Zealand. Two to four people in 100 over the age of 45 will have glaucoma – one in 10 for those over 70. But, she says, half of them don't know they have it.

She told *New Scientist* last year that ophthalmologists stand at the cusp of the next great advance in their field – one she says will probably be in glaucoma surgery, which is curiously both advanced

and static. "The laser side of surgery has advanced dramatically ... but some of the fundamental principles frustratingly have been stable, to be honest.

"Most of the time as a surgeon, we cut out badness. We sew it up and we let it heal. Glaucoma surgery's very different in

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that there's no badness to cut out, so to speak. You're creating a new pathway for fluid to drain, you're having to adapt the physiology because the pathway in the eye itself is not coping.

"So you don't want the body to heal it completely, because if you heal it it's going to scar down the pathway. So in a way, the body's natural healing mechanism is going against what the surgeon wants to achieve."

The newest research at the University of Auckland is around modifying that healing response.

Because of the nature of glaucoma surgery, Danesh-Meyer has a relationship with her patients that most surgeons won't. "I tell them we're going to grow old together. It is a very special part of being a glaucoma specialist, having that long-term connection. My daughter always teases me and says, 'If you were clever, you'd cure them, Mum. Then you wouldn't have so many patients!'"

"I guess that's the beauty of ophthalmology: you have the surgical side of things, which is very satisfying to be able to operate and make a difference and improve things, and you also have the side where you have the longer relationship."

That glaucoma is an invisible disease to those it afflicts puts an even greater burden of trust on the specialist, Danesh-Meyer says – patients have to believe their doctor despite not having any symptoms.

"Some of my patients say, 'I don't notice it', and I say, 'That's great, I'm doing my job. If you're noticing it, then we're on a slippery slope. That's the stage we have to keep it at – so you don't notice it. Let me lose sleep over it, but not you.'"

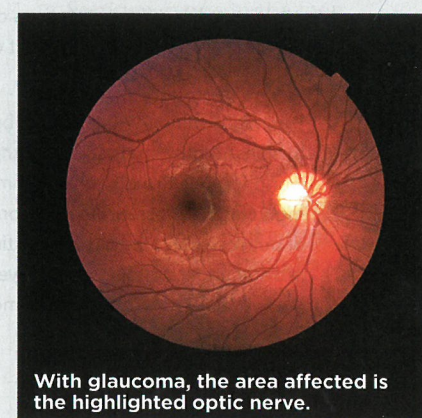
Glaucoma facts

- Glaucoma is a group of related diseases where optic-nerve fibres progressively die, taking away the peripheral vision first.
- Glaucoma is the number-one cause of preventable blindness in New Zealand.
- Glaucoma can be halted, if detected early enough, but not reversed.
- Glaucoma NZ recommends a check with an optometrist at age 45, and every five years thereafter, or more

frequently if there are other risk factors.

- Risk factors include age, family history, short-sightedness, diabetes, hypertension and steroid use.
- Though no evidence suggests wearing incorrect over-the-counter spectacles causes permanent harm in adults, it may mean missing out on an eye examination that assesses the risk of glaucoma.

Source: www.glaucoma.org.nz



With glaucoma, the area affected is the highlighted optic nerve.