

children's pain as effectively as did the standard long-accepted protocol — giving babies a sugar solution before a procedure. Within a year of that discovery, almost every NICU in Finland was using Axelin's parental-hold technique, and she had received calls from hospitals in Sweden, Switzerland, Norway, Estonia and Canada that all wanted to implement it.

"It's important for nurses to know and notice that they can make a change in care," says Axelin. "In nursing research, it's all about a holistic view of the patients we work with every day."

Alexander echoes that sentiment, emphasizing that nursing science is not about discovering new therapies or drugs to treat a particular disease. Rather, it focuses on understanding people's responses to treatments and alleviating symptoms to improve quality of life. Her research aims to find ways to tailor nursing care to each patient who has cancer.

Grady says that the NINR's vision for nursing science is to generate a knowledge base that will improve clinical patient care and help to shape US health-care policy. Although many nursing interventions might seem obvious in hindsight — such as parents holding their babies in the NICU — these care procedures must still be tested under rigorous conditions to prove that they lead to better patient outcomes than do current standards of care.

In some ways, nursing science is playing catch-up as researchers race to fill in holes left in the scientific literature — for instance, how transport by helicopter might alter a trauma-patient's physiology. The field is also

poised to determine how nursing care might be delivered to patients now — and in the future — through smartphones and other forms of digital technology.

IN THE THICK OF IT

The US military has been a front-runner in training nurse scientists, with the US Army, Navy and Air Force each sending one or two nurses for doctoral work each year for the past decade. Although military nurse scientists run research programmes that are designed to address military medicine, situations and populations, their work spans a wide swathe of disciplines, from physiology to public health. Navy Commander Virginia Blackman, a critical-care nurse scientist at the Walter Reed centre, studies how different pain-management protocols used on trauma patients in the field might

"In nursing research, it's all about a holistic view of the patients we work with every day."

affect their long-term development of chronic pain or post-traumatic stress disorder. Like many nurse scientists in hospitals, Blackman advises staff nurses on how best to convert the latest research findings into practice.

As a public-health nurse scientist in the US Air Force, Lieutenant Colonel Jennifer Hatzfeld has worked on projects as diverse as boosting mammogram rates in military wives and — while deployed to Kandahar, Afghanistan — designing protocols for treating blast-fragment wounds. Now based at Fort Detrick, Maryland, she manages the Department of Defense's 'en route' care research portfolio, which focuses on improving care for patients during air or ground transport.

"Some days, it's a little bit like managing somebody's cheque book," Hatzfeld says of her job as a programme manager: she decides which projects to fund. "But I love it because it's an opportunity to strategically guide the future of en route care."

She says that nursing usually attracts those who want to take care of others and contribute to making the world a better place — not necessarily those who see themselves pursuing a doctoral degree. But nurses have important roles in research, she says. They bring unique perspectives to research teams because they are usually closest to the final stages of a study, when an intervention is delivered to a patient or when carers are helping someone to cope with side effects. "There are questions that we need asked and answered that are specific to nursing," Hatzfeld says. "If we don't do it, then we are allowing physicians or other disciplines to ask those questions with what might not be the right perspective or approach." ■

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TRADE TALK

Career doctor



After finishing a PhD and a postdoctoral fellowship in virology, Thomas Magaldi forged a career helping science graduate students and postdocs to plan

their paths. He is now the career-services administrator at the Memorial Sloan Kettering Cancer Center in New York City.

Why did you go to graduate school?

I wanted to be a professor at a small liberal-arts college. I learned that I needed a PhD to do that.

How did that work out?

During my PhD programme, I started to question my goals. I helped to develop a career-networking group for science trainees at Yale University in New Haven, Connecticut, and I explored other career options, including a science-policy fellowship. But every fellow I spoke to had done something interesting outside the laboratory; I knew that I wouldn't be competitive.

So what did you do?

While finishing my thesis, I decided that I should also pursue skills that would set me apart. I did an internship for the US Department of State on how the United States could help Mongolia to create a viable science-education programme. I spent my nights doing that during the last few months of my PhD. Then, for my postdoc, I chose a mentor who would keep me excited about science and who was in Washington DC, where I would have access to policymakers. I volunteered to meet with my local congressman about raising the US science budget, and I taught as an adjunct professor.

How did all of that experience help you?

When my wife and I had a baby, we needed more than my postdoc salary and we wanted to be near family. I realized that I had already built a competitive CV for many positions outside the lab, but still requiring a science PhD and postdoc training. The specific scientific work I had done would not distinguish me, but my other experiences would. For the jobs that I wanted, I was ready. ■

INTERVIEW BY MONYA BAKER

This interview has been edited for length and clarity; see go.nature.com/5xbdz6 for more.

SHOJA LAK



Anna Axelin at the University of Turku, Finland.