



Hans Van Dongen, front, and Greg Belenky in the observation room of the Sleep and Performance Research Center. (Photo by Robert Hubner, WSU Photo Services)

## COLLABORATIVE RESEARCH

# Making sense of the tired brain

BY JUDITH VAN DONGEN  
COMMUNICATIONS, WSU SPOKANE

The human brain is a mystery. Despite efforts to probe its depths, researchers have only scratched the surface.

Last year, the Sleep and Performance Research Center at WSU Spokane examined the effects of sleep deprivation on executive functions, those high-level cognitive abilities that regulate more basic abilities and behaviors.

Center director **Gregory Belenky** and assistant director **Hans Van Dongen** worked with professors of psychology **John Hinson** and **Paul Whitney** to design the study, which was managed by doctoral psychology student **Adrienne Tucker**.

Participants spent a week in the lab under continuous monitoring while performing tasks that measured different aspects of executive function. One group was kept awake for two consecutive nights (62 hours); the other group was on a normal sleep schedule.

Results of earlier studies had been mixed: some researchers suggested that executive functions are especially vulnerable to sleep loss, while others indicated they are relatively resilient. The WSU study found that neither was completely true.

### Irrelevant memory

"It's much more complicated," said Van Dongen. "Certain aspects of working memory appeared to be resilient, even through 62 hours of sleep deprivation, but this wasn't true for all aspects of working memory. And that can have peculiar consequences."

When people are sleep deprived they have trouble remembering things. This includes information that is no longer relevant for them. However, failure to remember information that is no longer relevant can be an advantage. People who are not sleep deprived sometimes face difficulties in making decisions because of irrelevant information that comes to mind.

Perhaps because they more readily forgot irrelevant information, subjects who were sleep deprived actually performed better on certain decision tasks.

### Facets of sleep loss

Yet it's not clear whether this advantage transfers to real-life scenarios. "It depends on what you're asked to do under what type of circumstances," said Van Dongen, who emphasized that this study is the first of a line of research that he and Belenky hope will lead to a better understanding of how sleep loss affects people in daily life.

The researchers plan to tackle this issue from many different perspectives through externally funded collaborations with other WSU researchers. For example, they are interested in studying whether sleep deprivation is involved in how people with chronic illness make health-care decisions.

"Many people who are otherwise perfectly capable of making the right decisions on how to take care of themselves don't always do that. This may be because they are fatigued, causing their decision-making capabilities to be impaired," said Van Dongen.

### Further explorations

Van Dongen and Belenky plan to partner with associate professor **John Roll**, an expert on substance abuse, to examine the effects of fatigue on decision making in patient populations.

Other collaborators include professor of criminal justice **Bryan Vila**, who investigates the role fatigue plays in executive decisions made by police officers, and Regents professor **James Krueger** and associate professor **David Rector**, who study the effects of fatigue at the level of neurons.

Ultimately, the researchers hope to study the effect of sleep deprivation on executive functions in a field environment, so they can examine how the lab research translates into the real world.

## BOLD VISION

# Building a pre-eminent health sciences center

BY BRIAN L. PITCHER  
VICE PROVOST FOR HEALTH SCIENCES  
WSU SPOKANE CHANCELLOR

We all know the future of health care cannot look like the past. Sixty million baby boomers and the cost of the health-care system tell us this. More fundamentally, the human desire for simple good health, in homes and communities around the globe, emphasizes this fact.

The traditional model has each profession functioning in a silo and "health" viewed primarily through a medical treatment lens. So, to truly change the health-care system we must change the model — the way we teach, deliver clinical care, conduct research and improve individual and community health.

A bold new vision for the health professions and sciences is emerging for WSU in Spokane. We are pleased to bring you this inaugural set of feature stories on just a few of the many accomplishments of Washington State University's Division of Health Sciences.

Here in the major medical center of the Inland Northwest, our vision is nothing less than to transform health and inter-professional health-care delivery, changing the way health professionals, scientists and scholars learn together, create new knowledge and serve others. Our vision may one day extend to a new type of interdisciplinary school for WSU's health professions that will build on the strengths of today's fine colleges and departments and tomorrow's new programs.

Interdisciplinary research is a hallmark of the work in Spokane, reaching beyond the health professions to design, education and the social sciences. We have launched the first interprofessional courses, and we build on those successes as we expand programs.

WSU's vision will lead us in a cultural shift in health-professions education, creating practitioners and researchers who embrace the opportunity to work as teams at the intersections of the health-care system and the community.

We see in the future a radical transformation of the system to achieve real health. The interdisciplinary health-care teams we educate will lead this revolution, utilizing laboratory science, clinical research, insights into individual behavior, genetic/biological/medical information, and new devices, medications and treatments.

We will work as one across the health professions and health sciences, across our outreach programs and our research institutes, moving knowledge and discoveries from the classroom to the clinic and the community.



Brian Pitcher

We see in the future a radical transformation of the system to achieve real health.

**MENTAL-HEALTH MEDICATIONS**

# Sharing expertise with students, community

BY LORRAINE NELSON  
WSU COLLEGE OF PHARMACY

When **Brandy Singer** took a job at Eastern State Hospital, she figured she would last two or three years and then move on.

"It's eight years later, and I'm still not tired of it," said Singer, a clinical pharmacy assistant professor at WSU and pharmacist at the state mental health hospital in Medical Lake, Wash.

Part of her decision to specialize in psychopharmacy was practical.

"I didn't think I could know everything there was to know about all the medicines out there, and I didn't want to be a jack of all trades," Singer said. "I wanted to know about one area; and with this, I get to keep my general medicine knowledge current because people who have mental medications also have physical medications."

The job also was attractive because it allowed her to teach.

"The best way to learn something yourself is to have to teach it to somebody else," she said.

**Real-life mentoring**

Each spring, Singer lectures third-year pharmacy students about psychiatric medications, then gives the students hands-on training in the pharmaceutical care laboratory.

"One of the things I have them do is assess a patient for side effects of their antipsychotic medications. I also give them scenarios that they might encounter in real life, such as a patient who mentions suicide, and I go over some tips in counseling people who have a mental health disorder," Singer said.

"Mental illness still carries a stigma. I think pharmacists are in a good place to break that."

She also mentors three or four pharmacy students, six weeks at a time, as they rotate through the hospital during their final year of pharmacy school.

**Health-care teamwork**

Student **Jennifer Hrytzik** — with five other rotations already completed — said the mental hospital rotation is unlike any of the others.



*Brandy Singer, left, a clinical assistant pharmacy professor and practicing pharmacist, teaches pharmacy students in the classroom, at Eastern State Hospital at Medical Lake and, in this picture, at a Spokane pharmacy. With her is Hadriana McIntosh, who will get her doctor of pharmacy (Pharm.D.) degree on May 2. (Photo by Cori Vaughn)*

"We learned about the side effects of the medications in class, but when you're seeing them in real life, they're much more significant and you definitely take them more into consideration," she said.

It's also different than a regular hospital where people are physically ill and there for a short time. In this case, students become members of a health-care team, working alongside staff pharmacists and other members — a psychiatrist, psychologist, social worker and nurses.

**Improving service**

Singer, a mother of two under the age of 5, recently reduced her hours with the hospital and college in order to work in a retail store specializing

in mental-health pharmacy.

"I knew a lot of the patients already, and now that they're out of the hospital, I get to see them doing well," Singer said.

She has established a rotation site at the mental-health pharmacy, where she shares the vision of the owner that the opportunities for pharmacy involvement in mental-health care are expanding. Rather than going to a hospital or medical clinic for blood tests or medicine delivered through a syringe, patients can get service more quickly at the pharmacy.

"I think the possibilities are kind of limitless out there, and I've been able to test that out in the short time I've been there," Singer said.

**NO PLACE LIKE HOME**

# Team focuses on design for Parkinson's residents

BY BARB CHAMBERLAIN  
COMMUNICATIONS,  
WSU SPOKANE

Privacy. Authority. Options. When Dorothy longed for Kansas on the silver screen, most of us probably didn't think of these as aspects of "home." When design doctoral student **Maryam Afshar** began a project for people with Parkinson's disease, though, she asked some important questions: "Why do we say the goal is a 'homelike' atmosphere? What does 'home' mean?"

Her questions offered key insights that guided an interdisciplinary design studio last fall, said **Bob Scarfo**, associate professor of landscape architecture at the Interdisciplinary Design Institute at WSU Spokane.

A diverse group — WSU undergraduate students from interior design, architecture and landscape architecture; master's students in nursing; doctor of design students, and business students from Eastern Washington University — tackled the assignment: create a warm, healthy and supportive environment for residents in mid- to late-stage Parkinson's disease whose needs often are not met in assisted-living facilities designed for a general aging population. Projects reflecting both design and health



*Bob Scarfo and Maryam Afshar examine a model from the Parkinson's design project. (Photo by Cori Vaughn)*

are a special focus at the Design Institute, where students work side by side with students in nursing, pharmacy and other health professions.

Students learned from their client, Puget Sound Housing for Parkinson's Disease (PuSH for PD), and from members of a Spokane support group about medical issues such as

"freezing:" People with Parkinson's confronted with a doorway or other confining design element may not be able to move forward and may need design cues in the environment to help them break free.

Students also learned that the authority to decide who enters your living space is one of those aspects

"Working with real clients, we're doing something that will be built," Afshar said. "We need to be responsible because our work will affect so many lives."

of "home" we may not realize until we stop to think about it. Design solutions included elements such as separate suite entrances, enabling residents to receive guests directly rather than routing them through institutional hallways.

"Working with real clients, we're doing something that will be built," Afshar said. "We need to be responsible because our work will affect so many lives."

Approximately 30,000 people in Washington have Parkinson's disease, as do more than 1.5 million people nationwide. The studio goal was to develop a conceptual set of design features that can be used no matter where this and similar projects ultimately are built.

**INVOLVING, HELPING FAMILIES**

# Research brings hope to injured veterans

BY JUDITH VAN DONGEN  
COMMUNICATIONS, WSU SPOKANE

**F**ighting a war is a life-changing experience in itself, but even more so for those who return suffering from traumatic brain injury (TBI).

It is estimated that more than one-fifth of surviving soldiers wounded in combat in Iraq and Afghanistan have TBI, a condition that occurs when physical trauma causes brain damage. Facing cognitive, behavioral, emotional and personality problems, survivors often struggle to live productive lives and reintegrate into the community. Their family members face challenges, too, in dealing with the changes in their loved ones.

Building on the idea that patients' family circles may be the key to their recovery, researchers in the federal Veterans Affairs (VA) health-care system are collaborating with WSU researchers to test the multifamily group treatment model on returning veterans with TBI.

**Expanding the model**

Developed by New England psychiatrist William McFarlane to treat schizophrenia, multifamily group treatment provides patients and their family members with education, support and problem-solving skills. **Dennis Dyck** — professor of psychology in neurosciences and former director of the Washington Institute of Mental Health Research and Training (WIMHRT) at WSU Spokane — stumbled on the model years ago and found it intriguing.

"In contrast with what typically happened in psychiatric illness, this model treated the family as a partner and made them part of the solution," said Dyck.

He developed a relationship with McFarlane that led to several collaborative

"This model treated the family as a partner and made them part of the solution."

projects. After an initial schizophrenia study that took the model from an inpatient to an outpatient setting, they worked with Bruce Becker from St. Luke's Rehabilitation Center in Spokane to adapt it for treatment of TBI and spinal cord injury patients.

Benefits reported in that last study included a decrease in depressive symptoms and anger expression by patients and a significant reduction in burden by caregivers.

**VA collaboration**

Other mental health professionals took notice, including Claire Henderson, associate director for evaluation and health services at James J. Peters VA Medical Center in New York, who had been looking for an intervention that would engage family members in the treatment of TBI patients. She and VA colleague Deborah Perlick approached Dyck to find out more.

Now, Dyck and WIMHRT research associate **Diane Norell**, who also was involved in the earlier studies, are collaborators on a two-year project headed by Henderson and funded by the U.S. Department of Defense. The study will examine the feasibility of using multifamily group treatment within the VA system on TBI-affected soldiers returning from Iraq and Afghanistan.

Last fall, Dyck and Norell trained clinicians from the study's three treatment sites, VA medical centers in New Jersey,



Dennis Dyck and Diane Norell discuss their traumatic brain injury study, which evolved out of projects that started in Spokane more than 15 years ago. (Photo by Judith Van Dongen)

New York and North Carolina. Norell will provide supervision to the clinicians for the next year and will supervise the therapy of the 32 study participants. Both will assist with the development of a treatment manual, and Dyck will help write up the research findings.

**Alzheimer's next**

Dyck considers his exploration of

the merits of multifamily group treatment far from over. With WSU professor of psychology **Maureen Schmitter-Edgecombe**, he is looking to adapt the model for early-stage Alzheimer's patients. He also hopes the study with Henderson will lead to even bigger projects.

"My dream is for this to develop into a multisite clinical trial," he said.

**IMPROVING PATIENT CARE**

# Nursing Ph.D. addresses shortage, research needs

BY MICHELLE GALEY  
COLLEGE OF NURSING

WSU's inaugural cohort of nursing Ph.D. students is completing its first year of study, the initial step on its way to meeting at least two critical health-care needs:

- Providing qualified faculty to teach students who will help alleviate the nursing shortage.
- Providing research and solutions to meet complex health-care needs.

The U.S. nursing shortage will intensify as the baby-boom population ages and the need for health care grows. But schools are struggling to expand enrollment levels to meet the need.

"Nursing schools nationwide turn away qualified applicants because they do not have the capacity to meet demand, in large part due to a shortage of qualified faculty," said **Anne Hirsch**, senior associate dean and professor at the



Barb Richardson, a student in the nursing Ph.D. program, makes a presentation during one of her classes at WSU Spokane. (Photo by Cori Vaughn)

College of Nursing. More than 42,000 qualified applicants to baccalaureate and graduate nursing programs were turned away from nursing schools in 2006 because of a lack of faculty to teach them, according to the American Association of Colleges of Nursing.

Both Hirsch and **Ruth**

**Bindler**, director of the nursing Ph.D. program, were instrumental in launching the program for WSU.

"We are confident that our new Ph.D. program will attract nurses who aspire to teach and conduct research," Hirsch said. "This will allow us to provide the educational

programs needed to supply more professional nurses."

**Research improves care**

In addition to securing more nursing faculty, high-quality nursing research also is needed to improve health outcomes for individuals and their families.

"Many people aren't aware of the opportunities in nursing science, but it is increasingly needed and valued to improve health care," said **Barb Richardson**, a student in the program's first cohort. "Nursing science augmented with clinical practice is important in improving health outcomes for patients."

Obtaining a Ph.D. in nursing has been a lifelong goal for Richardson. Having served on the board of Spokane Public Schools for six years in addition to working as a clinical nurse in pediatric intensive care, she has a passion for promoting the best interests of children.

Six students enrolled in the Ph.D. program's first cohort.

The four- to five-year program will grow to a maximum of 46 students at full enrollment in its fourth year.

**Regional investment**

For seven weeks in the summer, students meet two to three days per week in a traditional classroom setting at WSU Spokane or WSU Vancouver. In subsequent semesters, a combination of classroom meetings, online modules and distance learning methods accommodates the needs and diverse interests of students.

The College of Nursing at WSU joins 96 other nursing Ph.D. programs nationwide. It is one of 12 in the 15 states that make up the Western Interstate Commission for Higher Education.

"WSU's program will help fill a significant regional gap in providing nursing education," said Bindler. "It truly is an investment in our university, our college and the communities we serve."

## ACUTE EXPOSURE

# Simulator teaches what books can't

BY BARB CHAMBERLAIN  
COMMUNICATIONS,  
WSU SPOKANE

The patient lies on the gurney while students cluster around. They check his vital signs, listen to heart and lung sounds, and ask him what's wrong.

"My chest hurts," he says. All their textbook training is on the line.

"Things happened so quickly," said senior nursing student Erin Snowberger. "My clinical experience before this was in a nursing home, where we dealt with patients with mostly chronic illnesses that they were coping with quite well. All of a sudden, I was in the middle of a cardiac arrest and I was caught off guard."

Fortunately, her patient was SimMan®. This high-tech human simulator and his counterparts, such as SimBaby, help bring theory and classroom instruction to life for WSU students in nursing and pharmacy at the Spokane campus.

"There is a huge difference between learning the signs and symptoms of anaphylactic shock and actually seeing them during a scenario in which you have the tools to perform the interventions," Snowberger said.

"SimMan prepares you for those experiences where books are not sufficient," added third-year pharmacy student **Drew Yancey**. "It allows for application of the book knowledge."



Jessica Sandstrom, left, and Erin Snowberger, right, practice on SimMan with Suzan Kardong-Edgren, an assistant professor for the College of Nursing. (Photo by Eric Galey)

## Learning on demand

Faculty members **Suzan Kardong-Edgren**, nursing, and **Brenda Bray**, pharmacy, program scenarios that test the students' knowledge in situations they may never have the chance to encounter in their live clinical rotations. Students intentionally are exposed to particular clinical/patient-care situations in an environment where it is safe to learn from

their mistakes — and learn communication and teamwork skills.

As hospital stays shorten and people enter with more acute conditions, this reduces patient availability for learning and decreases time for clinical faculty to teach. In contrast, simulators run on the academic schedule and can reproduce a wide variety of clinical conditions and situations on demand. They can

be used for teaching physical assessment skills and procedures such as starting an IV or inserting a catheter.

## Pharmacy leads the way

Simulation teaching techniques, while widely used in nursing programs, are not yet standard in pharmacy curriculum. WSU is only the second or third pharmacy program in the nation to incorporate simulation, placing the uni-

versity on the leading edge in preparing pharmacists to work as part of tomorrow's health-care teams to improve patient care and safety.

"This is a special opportunity to get experience working with patients in a clinical setting where the risks are very low," said third-year pharmacy student **David Villeneuve**. "Case-based education is crucial to helping us practice in the real world."

## EPIDEMIC PROPORTIONS

# Interventions combat obesity

BY MICHELLE GALEY  
WSU INTERCOLLEGIATE  
COLLEGE OF NURSING

Adolescents are supposed to grow. But in the U.S. they're becoming obese — in epidemic numbers.

More than 18 percent of U.S. youth are overweight, according to the U.S. Centers for Disease Control and Prevention, and another 15 percent are at risk of becoming overweight. Obesity is associated with decreased quality of life and a variety of potentially life-threatening health problems.

Whether due to cheap and convenient processed foods, super-sized portions or the popularity of sedentary TV and video games, obesity is a problem among children and adolescents. Unfortunately, few researchers agree on a solution. Most efforts to reduce childhood obesity have garnered only modest results.

The rapid increase in obesity indicates it is not only or always due to genetics, accord-



Taking part in one of TEAMS' monthly family-invited events, **Austin Gouin**, a student at **Glover Middle School**, sleds at **Bear Creek Lodge** in Montana.

ing to **Ruth Bindler** and **Kenn Daratha**, both WSU College of Nursing faculty. Rather, environmental and behavioral factors are involved.

Bindler and Daratha are part of a team working on a project with Spokane Public Schools to study school environment (food offerings, after-school programs, curriculum), family (parent food-buying decisions and activity levels), and individual health assessments.

The team was awarded a \$1.3 million U.S. Department of Agriculture grant in 2007 to evaluate the impact of multi-level interventions de-

## The TEAMS multi-disciplinary research team includes:

**Ruth Bindler**, professor and director, Ph.D. nursing program  
**Kenn Daratha**, assistant professor, nursing  
**Sue Butkus**, nutrition specialist, Puyallup Research and Extension Center  
**Tricia Gesele**, teacher, Spokane Public Schools  
**Summer Goetz**, Extension coordinator  
**Carrie Holliday**, Ph.D. nursing student  
**Tom Power**, professor and chair, human development department  
**Barbara Richardson**, Ph.D. nursing student  
**Mike Steele**, assistant professor, psychology  
**Doug Wordell**, director, nutrition services, Spokane Public Schools

signed to reduce obesity and improve adolescent health. The project, Teen Eating and Activity Mentoring in Schools (TEAMS), will run through 2011.

## Some more active

Health assessments completed in fall 2007 of 105 seventh-graders at four Spokane middle schools included everything from height and weight to blood draws for insulin levels. Students filled out dietary recall charts and answered surveys about sleep, television time, smoking and fitness levels.

These same assessments will take place again in spring and fall 2008 and spring 2009 with the same students. A second cohort of seventh-graders will be recruited this fall and follow the same two-year assessment schedule.

Students have been assigned

to both control and intervention groups. The intervention group is participating in school-based programs designed to increase physical activity and promote healthy eating. Activities include monthly family-invited

events, nutrition and fitness sessions, and environmental changes in the school.

## Complex solution

The collection of biological data, student behavioral data and physical assessments will provide a unique opportunity to examine the impact of multilevel interventions on early adolescent health, Daratha said.

"There are multiple causes; consequently, multiple solutions are required when looking at ways to combat childhood and adolescent obesity," Bindler said. "Kids, families, schools and communities are all part of the solution."

## HEALTHSCIENCES TODAY

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