



Charles Wira, Ph.D., organized a conference at DMS in June, funded by the National Institutes of Health, that brought together leading worldwide researchers on AIDS transmission and prevention.

Study examines effect of early treatment

A cancer diagnosis is a frightening event, often prompting patients and physicians to act quickly. But is immediate treatment always best? DMS researchers Louise Davies, M.D., and H. Gilbert Welch, M.D., set out to answer that question as it applies to thyroid cancer.

In 2006, Davies and Welch published an article in the *Journal of the American Medical Association* that showed a dramatic rise in the U.S. incidence of thyroid cancer. From 1973 to 2002, thyroid cancer diagnoses more than doubled, increasing from 3.6 to 8.7 per 100,000 people per year. The sharp jump, they determined, was due almost entirely to improved diagnostic techniques. Thanks to better imaging, doctors were finding tiny tumors that would have previously gone undetected. In other words, more people were being diagnosed with cases of thyroid cancer, but some might not ever pose a threat to their health.

Tumors: To better understand how such patients should be treated, Davies and Welch turned to a database maintained by the National Cancer Institute. Focusing on patients with papillary thyroid cancer whose tumors had not spread beyond the thyroid, they compared the survival rate of

patients who underwent surgery (and, in some cases, radiation therapy) to that of patients who had neither.

Close: In the journal *Archives of Otolaryngology—Head and Neck Surgery*, they reported that, after 20 years, 99% of patients who received treatment and 97% of untreated patients were still alive. “I was actually quite surprised that the survival curves were so close,” Davies says.

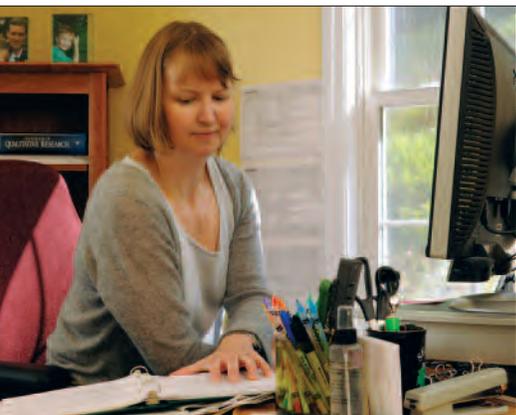
Given that survival for both treated and untreated patients is so high, the researchers concluded that some patients might do well to put off surgery and instead have their cancer closely monitored over time. Thyroid cancer surgery typically involves the removal of all or half of the thyroid. While effective, this can result in problems with the adjacent parathyroid glands or damage that hinders speaking and swallowing.

But Davies acknowledges that translating a population-based statistic to an individual level is easier said than done. After all, the difference between 97% and 99% survival may be small, but for 2 patients in 100, it’s a matter of life or death. “I think it puts the onus on the physician to really be clear about what the risks and benefits are, and decide which risks they and the patient are going to take together,” she says.

Goal: Davies won’t go so far as to say the study provides evidence of overtreatment of thyroid cancer. Her goal, she says, is to help patients and physicians understand that immediate treatment isn’t the only valid option. “I think it’s really hard for people to not take action,” she says. “There are risks associated with surgery. There are also risks associated with not doing surgery. We’re just hoping people will use this information to have informed discussions and not make decisions based on fear or hearsay.”

She hopes people don’t “make decisions based on fear or hearsay.”

KIRSTEN WEIR



JON GILBERT FOR

Davies was surprised by the results of the study.

Parental guidance suggested

Parents concerned about alcohol use by adolescents may want to consider saying “no” to R-rated movies, according to a survey of 2,406 students from 15 New England middle schools. Students who had never drunk alcohol without their parents’ knowledge were surveyed twice, 13 to 26 months apart. The DMS team, led by pediatrician Susanne Tanski, M.D., controlled for “sociodemographics, personality characteristics, and authoritative parenting style.” Writing in the *Journal of Studies on Alcohol and Drugs*, the researchers concluded that children whose parents were more lenient regarding R-rated movies were more likely to drink in the near future.



Change of heart

The likelihood that your cardiologist will recommend certain heart procedures may depend more on where you live and your doctor’s fear of being sued than on your condition, according to a recent study by researchers at Dartmouth and Maine Medical Center. Using patient vignettes, they surveyed cardiologists and found that in certain regions cardiologists are more apt to recommend cardiac catheterization based on “nonclinical” factors such as fear of malpractice suits. The study was published in *Circulation: Cardiovascular Quality and Outcomes*.





A study led by DMS's Brent Berwin, Ph.D., looking at how certain bacteria can resist attack from the immune system, was chosen for the Research Highlights section of *Nature Immunology*.

Teasing out factors in teen self-esteem

As almost everyone who has survived their teens knows, self-esteem can fluctuate widely during adolescence. Low self-esteem during this crucial period of development can contribute to depression, anxiety, eating disorders, destructive behaviors, and substance abuse.

Hoping to tease out some of the potential causes of low self-esteem among teens, researchers in DMS's Departments of Pediatrics and Psychiatry sifted through the responses from a large national survey. They identified a number of factors associated with low self-esteem and published their findings in the journal *Academic Pediatrics*.

"We undertook this analysis to better understand how self-esteem in adolescents is affected by a number of modifiable risk factors, since self-esteem is an important determinant of risk behavior," says Auden McClure, M.D., one of the study authors.

Size: Previous such studies have yielded interesting results, but many have had small sample sizes and looked at a limited number of variables. This one used a large, representative national sample of 6,522 adolescents between the ages of 12 and 16. All were interviewed by phone.

The self-esteem measure was a composite of three survey items, including re-

sponses to statements such as "I like myself the way I am." Questions about demographics, social habits, sensation-seeking behavior, and school performance were also included. Some questions were addressed to the adolescents and some (regarding income, for example) to their parents or guardians. Respondents could use the telephone touch pad to answer sensitive questions, such as about alcohol use, to maximize honest answers.

Age: The risk factors identified by the survey can be divided into those that are potentially modifiable and those that aren't. Factors such as age and race, for example, were shown to be important. Older respondents tended to have lower self-esteem, while black respondents (especially girls) had higher self-esteem on average than whites or Hispanics. Higher household income and increased parental education were also associated with higher self-esteem.

But a number of factors associated with lower self-esteem can be modified, including being overweight or obese and watching a lot of television. Participating in team sports and doing well in school seemed to provide some protection from low self-esteem. Parenting style was also a factor; adolescents who felt their parents were attentive and set boundaries were less likely to suffer poor self-esteem.

Risk: The researchers note that bolstering self-esteem among adolescents by addressing these risk factors might help prevent more serious health and social problems later in life—one of the goals of their study. "As a pediatrician and researcher, I am always interested in how we can translate findings into practical advice for clinicians and families," McClure says.

As with many health issues, later problems could well be mitigated by a focus on prevention.

Some factors are potentially modifiable and some aren't.

JAMES ROULETTE



Team sports seem to be a plus in teen self-esteem.

KATHERINE ROWE

Relative risk of smoking

Taking a close look at data on colorectal adenomas yielded some intriguing results for researchers at Dartmouth's Norris Cotton Cancer Center. In an analysis of several thousand patients, they found that smoking for more than 15 years was associated with a 55% greater risk of developing colorectal adenomas. But for those with a family history of colorectal adenomas, smoking made little difference in their risk. "Patients with no family history should be counseled about smoking as a significantly added risk factor for adenoma occurrence," the authors wrote in the *Journal of Cancer Epidemiology*.



Caught red-handed

Many anesthesia providers are giving bacteria a free ride from one operating room to another, DHMC physician-researchers discovered. Led by anesthesiologist Randy Loftus, M.D., the team examined 164 cases, comparing bacteria from IV tubing and other equipment to bacteria isolated from the hands of anesthesia providers. Bacterial transmission to IV tubing, for example, was identified in 11.5% of cases; 47% were traced to the hands of anesthesia providers. "Contaminated hands of anesthesia providers serve as a significant source of . . . contamination in the operating room," the authors concluded in *Anesthesia and Analgesia*.





Harold Swartz, M.D., Ph.D., was awarded \$16.6 million from the National Institutes of Health to develop a portable device to measure radiation exposure in survivors of a nuclear catastrophe.

A break in the quest for a cancer vaccine

For decades, scientists have tried to develop vaccines against cancer using viral vectors, viruses that have been modified so they can't cause disease but can still instigate an immune response. The results have largely been disappointing. "Researchers have tried a lot of different types of viral vectors," says DMS immunologist Edward Usherwood, Ph.D. "But most haven't worked very well."

He led a recent study, published in *Cancer Immunology, Immunotherapy*, suggesting that a different type of viral vector may lead to better results. A vector is an agent that can introduce something, such as a gene or vaccine, into the body. The researchers found that vectors derived from persistent viruses—those that can't be cleared from the host—may offer better antitumor immunity than those from short-lived acute viruses.

Cells: The immune system often overlooks tumor cells because they appear similar to normal, healthy cells. But the immune system will recognize a viral vector as a foreign object and so mount an immune response. Scientists can add proteins specific to tumor cells to the modified virus and then inject the vector into

the host. The hope is that when immune cells called T cells are activated against the virus, they learn to recognize the tumor-cell proteins, leading to an attack on the tumor along with the virus.

Virus: Usherwood previously found that T cells act differently depending on whether the vector was derived from an acute or persistent virus. He hypothesized that the immune response induced by vectors from persistent viruses could provide superior tumor protection. "The logic behind their approach is that the persistent virus will provide continual reminders of the tumor's identity to the host," says Timothy Bullock, Ph.D., a University of Virginia immunologist not involved in Usherwood's study.

The DMS team—including Mary Jo Turk, Ph.D., and research assistant Weijun Zhang—engineered melanoma tumor cells to express short peptides derived from a specific virus. This created an artificial target for the T cells. After exposing mice to the tumor cells, the researchers infected some of the mice with an acute version of the virus and other mice with a persistent version to see which produced the more effective T cell response.

The persistent virus induced a stronger response, including greater production of granzyme B, a protein that plays a key role in destroying tumor cells. Bullock calls it "provocative data suggesting that more effective cancer vaccines may be obtained by using recombinant viruses that are not actually cleared by the host."

Usherwood's team is now trying to identify which viral vectors would be safest for use in humans. They also hope to use a mouse model that is capable of spontaneously developing tumors. This would provide a more accurate representation of cancer in humans—and a tougher test for persistent viral vectors.

Usherwood, right, and Zhang, left, took a different approach to developing antitumor viral vectors. KRUPA PATEL

Vectors derived from persistent viruses may offer better immunity.

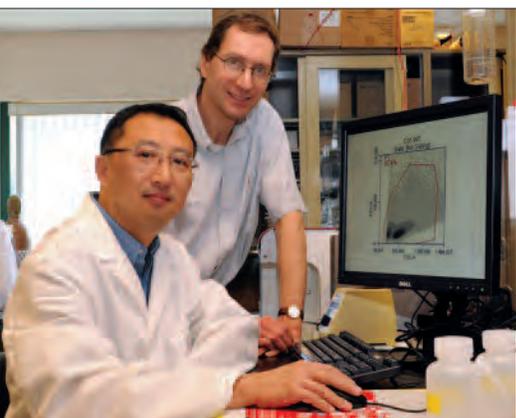
Mental images

Treatment decisions made by people with severe mental illness may be strongly influenced by their ethnicity and race, concluded a study led by Elizabeth Carpenter-Song, Ph.D. The researchers found that mental-health patients of differing ethnic backgrounds view their conditions, and mental health services, differently. They wrote in *Transcultural Psychiatry* that African-American and Latino patients were more likely to hold "non-biomedical interpretations" of mental illness and to be "critical of mental health services." By contrast, Euro-American patients held "disease-oriented" views of their conditions and were more likely to seek mental-health treatment.



Millions more

When a team of DMS researchers examined trends in Americans' use of chiropractic care, they found that chiropractors have attracted millions of new patients since the late 1990s. Inflation-adjusted expenditures on chiropractic rose from \$3.8 billion in 1997 to \$5.9 billion in 2006, they reported in *Health Services Research*. The surge was due to a 57% increase in the overall number of patients, from 7.7 million in 2000 to 12.1 million in 2003. From 2003 to 2006, however, the number of chiropractic patients remained relatively stable. ■



XON OLBERT FOR

Usherwood, right, and Zhang, left, took a different approach to developing antitumor viral vectors.