They’re cheaper than mice, simpler than fruit flies, transparent and hermaphroditic. In fact, these microscopic worms, known as *Caenorhabditis elegans*, are the multicellular organisms of choice for several scientists making breakthrough discoveries in neurodegeneration and immune response.

Only 1 millimeter in length, the worm is also transparent, which makes it easy for scientists to observe what happens inside its cells. In addition, with such a short life span—about two or three weeks—the nematode is ideal for longitudinal studies, especially those that examine cell aging and cell death. “For studies with mice, you have to wait a year to [see the effect on their lifespan],” says Jiou Wang, assistant professor in Biochemistry and Molecular Biology (BMB). “That’s not efficient.”

In his lab, Wang uses *C. elegans* to research the neurodegeneration that occurs in amyotrophic lateral sclerosis (ALS), commonly known as Lou Gehrig’s disease. Neurodegeneration, the hallmark of diseases such as Alzheimer’s, Parkinson’s and Huntington’s, involves the death or damage of neurons. What results are symptoms including dementia and the loss of memory, speech and movement.

A subset of ALS is believed to be caused by mutations in the gene SOD1, which is what Wang studies in *C. elegans*. Having built a strain of the worm that contains a mutated human SOD1 gene, he examines the mechanisms of how its protein misfolds and how that misfolding is associated with toxicity among motor neurons.

Many human neural functions are conserved in the worm—but where humans have billions of neurons, *C. elegans* has exactly 302. “The wiring of its neurons is well-known,” says Wang, MD, PhD. “It has a uniquely simple neurosystem.” But he is quick to point out that the organism has all the classes of neurons that humans do, such as sensory neurons, motor neurons and interneurons (also called connector neurons).

Immune response is another area of research made more efficient by the worm. Researchers Valeria Culotta, a BMB professor, and Julie Gleason, a postdoctoral fellow in Culotta’s lab, are using *C. elegans* to explore the role of manganese in the growth of patho-
gens within a host organism. Pathogens such as Salmonella and Staphylococcus—both bacteria—need manganese to be infectious. The researchers are testing what happens to fungal pathogens when the supply of manganese is altered. Specifically, they are looking at the fungus Candida albicans, which causes thrush. Most commonly afflicting infants, thrush is a yeast infection that healthy humans fight so effectively they fail to notice its presence—but it can cause a deadly systemic infection for those who are immunocompromised.

It turns out that C. elegans has evolved with a simple form of innate immunity (compared to humans, who have both innate and acquired immunity). This immunity shares some common features with that of humans, and the worm is vulnerable to the same types of infections. “With mice it would take months,” says Gleason, PhD. “We infect the worms, monitor for four days, and we get a large amount of data.” Because C. elegans has only 959 cells, monitoring pathogenesis in the organism is especially easy. With the help of the humble worm, Culotta and Gleason are gathering new insights into how the infection progresses when the host is overloaded or depleted of the metal—which could lead to new treatment for those affected.

The Caenorhabditis Genetics Center in Minnesota stocks every strain available. For $7 a shipment, scientists like Culotta, Gleason and Wang can mail-order any strain, with a wide selection of mutations. A shipment of C. elegans arrives on Petri dishes containing their favorite food, E. coli, and the worms are ready to be used. “They’re infinitely cheaper than mice,” says Culotta.

A SHORT WORM…
At just 1mm in length, C. elegans is one of the smallest organisms with a nervous system. About half of known human disease genes have a homologue in this nematode. The worm’s genome was fully sequenced in 1998.

THAT SHARES…
C. elegans uses the same neurotransmitters as vertebrates, and the pharmacology of this round worm’s receptors is strikingly similar to that of humans.

EATS A LOT AND…
Blind and deaf, C. elegans can smell and taste and detect heat. Most of its life is spent eating. A healthy C. elegans defecates about every 45 seconds throughout its lifespan.

HAS SEX OFTEN.
Though C. elegans lives only two weeks, it leads a busy life. It has sex early and often, usually with itself. In the wild, it is free living (as opposed to parasitic), lives in soil and eats bacteria and fungi.

SOURCE: IN THE BEGINNING WAS THE WORM, ANDREW BROWN.

Worm strains can be homegrown, too. Culotta calls Gleason a “great builder of worms. She can make you any kind of worm you want.”

Because they’re hermaphrodites, says Gleason, tinkering with their genetics is easy: “You mate your gene of interest into your worm once, and then they’ll do everything for you. It’s simpler than the fruit fly.”

And models don’t get much heartier than C. elegans. “You can freeze them away like a roast beef,” says Culotta. “You can thaw them out 10 or 15 years later, and they’re ready to go.”

According to Thomas Hartung, director of the Center for Alternatives to Animal Testing (CAAT), there has been a fivefold increase in publications that use the worm in biomedical and environmental toxicology studies in the last decade, and the organism easily lends itself to high-throughput applications.

If researchers can identify the pathways of human toxicity that are conserved in the worm, he says, they will be able to test more chemicals, while dramatically reducing the costs associated with animal testing. In fact, CAAT has promoted C. elegans research and considers such applications in their funding program, says Hartung, who holds the Doerenkamp-Zbinden Professor and Endowed Chair for Evidence-Based Toxicology.

Clearly, C. elegans’ rise in the laboratory benefits more mammals than just humans. Hartung, MD, PhD, believes it is clearly outperforming mouse, hamster, rabbit and guinea pig models for large-scale toxicity screening. “This microscopic worm,” he says, “can become a most valuable work horse.”

—Christine Grillo
As dengue infections surge in south Florida, a Miami-Dade mosquito control officer hunts for larvae.

It’s no surprise that dengue fever makes seasonal appearances in Thailand, Vietnam, Brazil and other places where the disease is heavily entrenched. However, dengue recently reared its ugly head in a new place: Key West, Florida.

The CDC reported this summer that 5 percent of Key West’s residents had been exposed to the disease in 2009. Those findings make the efforts of International Health associate professor Anna Durbin very timely. Durbin plans to evaluate a live, attenuated vaccine to protect against the four viruses responsible for dengue. The first formulations of this vaccine, described in the Spring 2010 Johns Hopkins Public Health, have now entered phase 1 clinical trials, designed to test the safety and get an early read on effectiveness.

Starting in mid-July, Durbin, MD, and her colleagues began recruiting 84 volunteers, each of whom will receive one of three types of dengue vaccine or a placebo—neither the clinical staff or volunteers will know which one until the study’s end. The three formulations will test the volunteers’ response to slightly different strains of the four dengue-causing viruses.

An important difference between this vaccine and the five other dengue vaccines currently in development, explains Durbin, is all the up-front work that went into testing individual components before they were combined into a single vaccine. In earlier studies, researchers tested formulations containing just one of the four dengue viruses. “One thing we learned is that these four viruses don’t necessarily infect people equally well,” Durbin says. The first dengue-3 virus tested, in particular, showed a low level of infectivity, so the researchers searched for a more infective one. The higher the infectivity, she explains, the more likely those vaccinated will produce an effective immune response.

The new vaccine formulations combine these more infective strains with the other three viruses in “tetravalent” formulas administered to volunteers in a single shot designed to stimulate immunity to each of the viruses that causes dengue. Volunteers have reported every other day for the first 16 days of the trial. They had physical exams, were interviewed about side effects, and had blood drawn to track their immune systems’ responses to the vaccine. Over the next few months, these volunteers will continue to have blood tests to see whether any antibodies to the viruses multiply and whether immunity remains present for the long haul.

If this experiment is a success, it could lend hope not only to the people of countries where dengue has long been endemic but also to places like Key West where dengue is a new phenomenon. While few people became ill from the Florida outbreak, some researchers including Harold Margolis, chief of the CDC’s dengue branch, worry that the Keys might become an outpost for dengue, allowing it to migrate to other southern U.S. cities where the mosquito that transmits this disease can survive.

Margolis says that a vaccine would be useful in places where dengue has a strong foothold: “By vaccinating susceptible populations, you’ll ultimately prevent epidemics.”

—Christen Brownlee
Envisioning a Better Test

In a medical journal shortly after the Civil War, a North Carolina doctor named Robert Hicks described a mysterious but nearly epidemic affliction he had seen among Confederate troops: “The soldier, who had marched all day without inconvenience, would complain of blindness upon the approach of early twilight, and make immediate application for transportation in an ambulance.” Hicks found that if he held a candle near an affected soldier’s eyes after sundown, “the pupils refuse to respond; and such was the uniform result in all my investigations.”

Hicks suspected that a poor diet caused the condition, and he was right. “Night blindness is now recognized as a classic sign of a lack of vitamin A,” says Alain Labrique, PhD ’07, MHS ’99, MS, an assistant professor in International Health.

With the help of a TV repairman in rural Bangladesh, and more recently a team of spacecraft imaging engineers, Labrique has turned Hicks’ long-forgotten candle-in-the-dark method into an automated, noninvasive device for assessing vitamin A deficiency, still a major cause of illness and early death in low-income countries.

“It’s shaping up to be a major advance in the field of micronutrient assessment,” says Keith P. West, DrPH ’87, MPH ’79, RD, the George G. Graham Professor of Infant and Child Nutrition at the Bloomberg School.

The traditional method for assessing vitamin A levels is the taking of a blood sample, which can be problematic in a low-income setting, because of the logistics involved in sophisticated blood tests as well as local taboos or fears about drawing blood. “There’s a definite need for easier and less invasive methods for assessing vitamin A levels in the field,” says Labrique.

In the 1980s, micronutrient research pioneer Alfred Sommer, MD, MHS ’73, Dean Emeritus of the Bloomberg School, unearthed Robert Hicks’ 1867 journal article, and he and others soon developed field techniques for measuring pupillary responses to weak light stimuli. These techniques worked in principle but were never adopted widely, among other reasons because they required dark, often hot, rooms or tents, and could be difficult to apply in people whose pupils were hard to distinguish from their dark irises.

While serving as an onsite scientist for a major vitamin A assessment and supplementation project in rural Bangladesh earlier this decade, Labrique had an inspiration. The project had just purchased a video recorder, and Labrique noticed that when he aimed it at a person’s face with the infrared night-vision feature switched on, normally dark irises appeared light-colored. Thus he could see people’s dark pupils very clearly.

Using a pair of swim goggles, a compact wireless video camera, a tiny light bulb, and lots of black tape and spray paint, Labrique fabricated a quick prototype in his basement, and refined it with the help of a village TV repairman. In basic tests this “portable field dark adaptometer” performed well enough to earn grants for further development, ultimately by engineers at Johns Hopkins’ Instrument Development Group, who had been working on the James Webb Space Telescope and other NASA programs. They turned it into a simple, robust system that can be plugged into a laptop’s USB port, and digitally record the pupil responses to a series of light stimuli—without the need for a dark room. “I just got back from Kenya, where in less than three hours, I trained five people to use this device,” says Labrique.

Labrique hopes that current testing of prototypes among Kenyan schoolchildren and pregnant Bangladeshi mothers will lead to further tweaks by engineers and widespread field use of the screening tool starting in 2011 or so. And since cardiovascular disease and diabetes also can affect the pupillary response, he notes that in principle the device could someday be used to screen inexpensively for these conditions.

“It’s been getting rave reviews at conferences,” says West. “And other investigators have been approaching us, saying, ‘Hey, can we have one of those to work with?’”

—Jim Schnabel
TB-Style Treatment for AIDS

For two decades, direct observation of treatment (DOT) has proved very successful against tuberculosis. By observing patients take their medications in health care facilities, trained workers have helped ensure treatment compliance—thus boosting cure rates.

Could DOT improve outcomes for those with HIV/AIDS?

After all, patients sometimes forget to take their antiretroviral medications. It would seem logical that DOT would help. Two years ago, Bloomberg School researchers set out to test that hypothesis with a randomized, controlled trial in South Africa.

The research team, which included principal investigator Richard Chaisson, MD, professor of Medicine, Epidemiology and International Health, hoped that patients who had a community member checking that they took their pills would have an easier time sticking to a schedule. While previous observational studies had shown that DOT improved adherence with antiretroviral therapy (ART), there were no clinical trials of the strategy, notes Chaisson.

“We ended up with mixed results,” says lead co-author Jean B. Nachega, MD, PhD, MPH ’99, an associate scientist in Epidemiology and International Health. “DOT didn’t improve adherence, as far as we could tell, but did improve survival.”

While DOT didn’t lead to higher rates of undetectable HIV in the blood, patients who received DOT had a 60 percent lower risk of death, according to results reported in the June 1 issue of the journal AIDS.

For the study, researchers recruited 274 participants from Cape Town, South Africa, and asked them to nominate a friend or family member as a supporter. They were trained in support techniques—such as encouraging patients to remember their pills and focusing on improvement in symptoms—and the importance of medication compliance. In the experimental group, supporters had extra training and were required to monitor at least one dose of medicine daily. Patients in the control group had a supporter who had only minimal training and did not observe them take their medication.

By counting leftover pills, and monitoring viral loads and CD4 cell counts, the researchers could see that compliance was good in both groups—a median cumulative adherence of 95 percent.

The only difference in the two groups was that at six months, the patients with a DOT supporter had better CD4 counts, although that difference disappeared at a year. Most importantly, though, only nine patients in the DOT group had died at the end of two years, compared with 20 in the control group. “The survival benefit was ... the most interesting and important finding of our study,” says Nachega, a professor of Medicine and director of the Centre for Infectious Diseases at Stellenbosch University in Cape Town.

Chaisson, director of the Johns Hopkins Center for Tuberculosis Research, says that the improved survival could be chance—or due to better medication adherence during the first six months of the study. But it also could be that supporters were doing other things for the patients that improved their chance of survival—such as transporting them to medical care, or giving them emotional or material support.

Says Nachega, “The ‘social capital’ provided by a trusted patient-nominated treatment may have contributed to saving lives, regardless of the DOT component of our intervention.”

—Kurt Kleiner

Unveiling the National AIDS Strategy

President Barack Obama announced the U.S. National AIDS Strategy on July 13, aiming to reduce new infections 25 percent by 2015. David Holgrave, PhD, chair of Health, Behavior and Society, and Chris Beyrer, MD, MPH ’90, Epidemiology professor, attended the White House announcement. The president, joined by AIDS policy director Jeffrey Crowley, MPH ’94, met with the Presidential Advisory Council on HIV/AIDS (PACHA), including Holgrave (seated, second from left) and PACHA chair Helene Gayle, MD, MPH ’81 (seated, far right).
Turning to AIDS’ Other Victims

In the decades since AIDS first emerged as a global public health threat, the gains have been substantial in fighting the epidemic in the general population, as well as in specific groups—gay men, blood transfusion recipients and infants with HIV-infected mothers who breastfeed.

And over the past decade, the African AIDS epidemic, embodied in the faces of orphans and women infected by their partners, has galvanized governments, private donors and international health agencies into action.

But another population ravaged by AIDS—people who use drugs—has attracted comparably little attention, even in regions where drug-related HIV is a major contributor to sharply rising infection rates. The epidemic is most pronounced in people who inject drugs, but sexual risk behaviors associated with other drugs are also an important factor in the HIV epidemic in drug users.

“This is a critical population that has been neglected for too long,” says Epidemiology Professor Chris Beyrer, MD, MPH ’90, who accepted an invitation from The Lancet to serve as guest editor for the journal’s special series on HIV in drug users. “If we are serious about responding to the global AIDS pandemic and if we ignore this component, we will fail.”

The themed issue was unveiled in July at the 2010 International AIDS Society (IAS) Conference, held in Vienna, in part, to highlight the growing AIDS epidemics in Eastern Europe, fueled largely by injection drug use.

“If you look at the rest of the world minus Africa, HIV related to drug use goes from being about 10 percent of the epidemic to a third of all infections,” Beyrer says.

Only 10 percent of injection drug users worldwide are being reached with a basic package of cost-effective prevention and treatment services, including needle and syringe exchange programs (NSP) and opioid substitution therapy (OST) for heroin users—strategies that have been shown to control outbreaks of HIV infection in this population—and antiretroviral drugs (ARV)

Drug users, like those in Ukraine, are a critical factor in the global AIDS pandemic.

for people who are HIV-positive.

HIV experts point to discrimination against drug users, inadequate drug treatment and abusive law enforcement practices as key factors in the spreading drug-driven HIV epidemic and in the higher morbidity and mortality outcomes among HIV-infected drug users compared to others living with HIV.

The crisis is particularly acute in Eastern Europe and Asia, with five countries—China, Vietnam, Russia, Ukraine and Malaysia—accounting for an estimated 2.4 million cases of HIV and nearly half of all injection drug users living with HIV worldwide.

In many of the former Soviet countries, hard-hit by cases of drug-driven HIV, methadone is banned, making OST unavailable. The consequences of such gaps extend beyond the drug user. Recent research indicates that HIV transmission from male injection drug users to female sex partners seems to account for much of the rise of HIV infections in women in Russia. In 2007, women accounted for about 40 percent of new HIV cases in Russia and the Ukraine.

“It’s a legacy of the old Soviet system, which was opposed to methadone and made it illegal,” Beyrer says. “It should not be surprising that this is the region with the most severe problem with injection drug use.”

Frequently, in areas with high rates of drug-related HIV infection, drug treatment programs are of poor quality, and, in some cases, the alleged programs are actually labor camps.

An article in The Lancet series features the first-person account of a heroin addict in China who was involuntarily committed to a detoxification center. He writes that he received no medicine during the process, and no food or water in the first phase of treatment. After he was deemed “cured,” the man was assigned to a hard labor camp for a year.

“These are not people who have been convicted of trafficking in narcotics,” says Beyrer, director of the School’s Center for Public Health and Human Rights. “They may have failed a drug test of dubious quality, and now they’re suddenly in this locked factory environment facing torture, beatings and exposure to TB and HIV.”

One of the most important findings to emerge from the special edition, says Beyrer, is that while single interventions will yield only modest reductions in HIV transmission through injection drug use, a combination, high-coverage approach of NSP, OST and ARV could reduce the incidence of HIV infection by more than 50 percent.

“We actually have a toolkit in hand,” he says, “and if we brought it to bear, we could turn this around.” —Jackie Powder
More Mishaps Among Aging Boomers

They say *Easy Rider* inspired a generation. But as the members of that generation motor into late middle age, their rides are becoming decidedly less easy.

From 2000 to 2006, motorcycling deaths rose 145 percent among Americans 65 and older, amid a general rise in fatal and nonfatal injuries. The findings are contained in a new study from the Center for Injury Research and Policy (CIRP).

“Since the paper went to press I’ve been able to check the 2007 data, and indeed the numbers of motorcycling deaths are still rising,” says epidemiologist Susan P. Baker, MPH ’68, CIRP’s founding director and co-author of the study in the February issue of *Injury Prevention*. “I think that people who were doing a lot of motorcycling back in the 1960s and ’70s, and are now in their 60s and 70s, are still on their bikes or back on their bikes, and suffering for it.”

**“Somebody once said that to move is to risk death, and not to move is to be dead already. I think there’s probably some of that feeling among the current generation of older Americans.”** —Susan P. Baker

Baker conducted the study with lead author Guoqing Hu, PhD, a former postdoctoral fellow at the CIRP who is now an associate professor at the School of Public Health, Central South University, Changsha, China. The researchers analyzed the most recent available death certificate and emergency room statistics for older Americans from a large CDC database.

Deaths among those 65 and older from all unintentional injuries increased by 6 percent from 2000 to 2006, while nonfatal injuries increased 7 percent. The figures are comparable to those for all other age groups, but fatalities from motorcycling, machinery, poisonings and falls showed unusually sharp and significant increases among the elderly.

These trends appear to reflect, in part, a more prolonged active life among the current generation of older Americans. “A 75-year-old person today is doing things his father probably would not have done at the same age,” says Baker, a professor of Health Policy and Management.

The elderly also are living with more chronic medical conditions and are taking more prescription drugs, which may enhance their proneness to certain fatal injuries, says Grant Baldwin, PhD, MPH, director of the CDC’s National Center for Injury Prevention and Control’s Division of Unintentional Injury Prevention.

Deaths from falls rose 42 percent from 2000 to 2006, a figure that represents thousands of extra deaths. But intriguingly, Hu and Baker found that nonfatal falls did not increase significantly over the period—hinting that increasing fall mortality may also be explained, at least in part, as a statistical artifact. “We think that fatalities after falls were once more likely to be attributed to later complications such as heart failure or infections, and doctors are now increasingly coding them as falls,” Baker says. —JS

Fatalities from motorcycle crashes have risen among the current generation of older Americans.

*GETTYIMAGES*
The aid groups that descended on Haiti after the January 2010 earthquake will most likely get high marks for their work. Why? They’ll be grading themselves. That’s how it’s done in the disaster-relief industry. This poses two problems. First, self-assessment is subject to bias. Second, it’s quite possible for an aid group to feel confident of having met its goals (for instance, number of meals served) without ever asking if the services offered were what people needed. Disaster relief has been called “the world’s largest unregulated industry.” Who says that? The Red Cross.

Now, two Johns Hopkins researchers want to propel a post-Haiti paradigm shift. Their tool is a questionnaire that asks people affected by a disaster to rate the aid offered; the survey’s co-author, International Health doctoral student Paul C. Perrin, calls it a “customer-satisfaction survey.”

This fall, Perrin, MPH, and Tom Kirsch, MD, MPH ’87, co-director of the Bloomberg School’s Center for Refugee and Disaster Response, plan to travel to the quake zone to test-drive their questionnaire. They have arranged to survey Haitians in and around the post-January 12 tent cities—now home to 1.2 million people. Kirsch and Perrin will employ Creole interpreters to conduct 20-minute interviews of 300 people in 30 temporary settlements in Port-au-Prince and in Léogâne, where the earthquake destroyed 80 percent of the dwellings. They will also interview 300 Haitians who live just outside the camps and who therefore most likely received different forms of help, or none at all. The interviewers will ask people to grade the quality of post-earthquake health care.

If the survey proves useful in Haiti, says Kirsch, it could be used in the future to pinpoint problems early enough so that aid groups could promptly make adjustments. “We could evaluate on a routine basis. We could use this method of asking what needs are met—like, ‘Did you get food today?’—every day or every week, rather than waiting for long-term outcomes like deaths from malnutrition.”

Kirsch believes that aid groups are interested in improving evaluation. “Everyone—from NGOs, to the federal government, to the UN—recognizes that having better data collection techniques is important. They recognize that the current methods are not necessarily ideal.”

Two characteristics of Kirsch and Perrin’s project set it apart from surveys that relief organizations might conduct, says Perrin. First, it will be administered independently, rather than by an aid group scrutinizing its own work. Secondly, the people to be interviewed represent the population as a whole; the researchers will use multistage cluster sampling to locate subjects, potentially including people who received no aid: “We’re trying to do it in a scientifically rigorous way—population-based rather than targeting individual customers,” Perrin says.

The survey asks for ratings of the quality of services in 14 areas. In assessing the sustainability of a relief project, for instance, the researchers will ask whether clinics were staffed by local health workers. In rating efficiency, they will ask whether any health assistance was misused. To gauge participation, they will ask whether marginalized or vulnerable groups received help. And to rate staff professionalism, they will ask whether health workers respected confidentiality. Perrin says that the survey could be used in other countries if it is adapted to suit other cultures and circumstances. It could also be altered to assess the quality of aid in the form of shelter, food, water or sanitation.

Kirsch has seen firsthand the flaws in the Haitian relief effort. He spent two weeks immediately post-earthquake providing medical care in Haiti. One of the biggest problems, he says, was that some aid groups offered help without first asking what was needed. It was common for people to “randomly send garbage” like expired drugs, and for doctors and nurses to show up without knowing where—or whether—they were needed or who would feed and house them, says Kirsch, an associate professor in the Department of Emergency Medicine at the Johns Hopkins School of Medicine and the Bloomberg School’s Department of International Health.

Perrin points out that disasters are increasing because of population growth, urbanization and environmental degradation. According to David Fisher, an expert on legal aspects of disaster relief for the International Federation of Red Cross and Red Crescent Societies, between 2000 and 2006 alone, disasters affected nearly a third of the world’s population.
Risks of Online Thinspiration

Many of the 180 anorexia and bulimia websites had supportive content, say researchers.

In the alternate reality of anorexia and bulimia, no thin is too thin, and control and perfection are codes for continued starvation. Facing social disapproval, some “anas” and “mias” form their own supportive communities—which the Web now makes easier than ever.

“For almost any high-risk behavior nowadays there’s a website community,” says Dina Borzekowski, EdD, EdM, MA, an associate professor in Health, Behavior and Society. “There are websites for people who are into cutting behaviors or suicidal ideation. So it’s not surprising that there are websites for pro-ana and pro-mia behaviors.”

Anorexics eat rarely or not at all; bulimics binge but then purge by vomiting or using laxatives or enemas.

In the June 17 issue of the American Journal of Public Health, Borzekowski and colleagues at the Bloomberg School and Stanford University report the most comprehensive content analysis to date of pro-ana/mia websites. Nearly all (91 percent) of the 180 sites they found were easily accessible to casual browsers, and most (84 percent) presented pro-ana content, while about two-thirds presented pro-mia content.

Such content typically included “thinspiration” images of skinny models or celebrities (85 percent), and helpful guides for ana/mia behaviors (83 percent), including purging tips and the concealment of weight loss from loved ones.

“In conversations I had with different members, they seemed to need frequent reassurance and validation, and it appeared that their offline relationships often weren’t very strong.”

—Sarah Brotsky

Yet as Borzekowski and her colleagues found, there are also many ambiguous and contradictory messages on these sites. More than a third (38 percent) contained recovery-related information, for example. In part this may reflect a desire to evade legal liability or adverse action by website hosting companies, says Borzekowski. Earlier in the decade, under pressure from health professionals, Yahoo and MSN shut down many pro-ana/mia sites, some of which later reappeared with new names and less one-sided content.

The thematic ambiguity on some of these sites may also simply reflect their role as virtual communities of tolerance. “People who suffer from these disorders face a lot of isolation,” Borzekowski says.

Sarah Brotsky, PsyD, a psychologist in private practice in Bloomfield Hills, Michigan, spent two months participating in these online communities for a research project published in 2007. “In conversations I had with different members, they seemed to need frequent reassurance and validation, and it appeared that their offline relationships often weren’t very strong,” she says.

That sense of social validation can derive from the content too, Brotsky adds. Nowadays her patients who struggle with eating disorders often come to her having obviously picked up online pro-ana/mia material, such as the Thin Commandments (“Thou shalt not eat without feeling guilty”…). Says Brotsky: “It tends to make therapy more difficult by keeping the person more enmeshed in the eating disorder.”

Borzekowski and her colleagues have been conducting a formal, soon-to-be-published study of these websites’ effects on eating-disorders patients who are in treatment. But even in this initial, just-published study, they made preliminary ratings of ana/mia website themes. “About a quarter of them conveyed what we regarded as very harmful messages,” Borzekowski says.

Borzekowski notes that the Web has now evolved so that proportionately fewer sites are under the authority of large, publicly minded service providers such as Yahoo, so a widespread shutdown even of the most militant pro-ana/mia sites is unlikely to happen. “But we as public health researchers can clarify the threat they pose,” she says. Reliable evidence can be useful for those who want to reach out more effectively to people who are suffering from these disorders, she says.

That threat is clearly a dynamic one. Even in the short time since Borzekowski and her colleagues finished gathering data for this study, more and more havens for ana/mia communities have sprung up online, for example on Facebook, MySpace and other social networking sites. “These days you can even get ‘thinspiration’ through Twitter, and tweets with extreme dieting tips,” Borzekowski says.

—JS
During kids’ annual physical exams, pediatricians dutifully track height and weight, update vaccinations and check overall physical health. But one important area often goes overlooked during the exam: the child’s mental health.

As many as 12 percent of children will suffer from a diagnosable mental health problem sometime in their childhoods, notes Larry Wissow, MD, MPH ’84, professor in Health, Behavior and Society (HBS). While most of the problems are relatively minor, says Wissow, “the bad news is that a lot of mental health issues in childhood go undetected for a long time.”

Serious mental health problems such as major depression or schizophrenia are rare in children. More common, milder disorders, like anxiety or attention problems, often aren’t diagnosed until the patients are young adults. By then, important developmental years have been affected, says Wissow, who is heading up the Bloomberg School’s new Center for Mental Health in Pediatric Primary Care, funded by a $5 million NIH grant.

He and his colleagues are developing techniques that primary care providers can use to flag mental health problems, refer the most serious cases to specialists and provide effective treatment to other patients.

Primary care providers are sometimes dubious that they can effectively treat mental and emotional disorders within the time constraints of a standard office visit. But a recent study Wissow conducted, along with HBS professor Debra Roter, DrPH ’77, MPH ’75, MS, and senior research associate Susan Larson, MS, shows that relatively short training can lead to better care.

In the study, providers who were taught seven different skills over three training sessions—including how to manage time during an office visit, ways to elicit patient concerns and ways to give advice—had patients with better outcomes than providers in a control group.

Among the strategies taught during the study: Providers can give a short questionnaire designed to start a discussion about possible problems, asking things like whether the child has seemed especially sad or angry lately. Something as simple as inquiring whether there is anything else they want to discuss can encourage a patient to bring up an issue, Wissow says. They can then offer short but effective counsel—perhaps by helping the family figure out one change that they can make to improve the situation.

“The important thing is to be optimistic and engaged with them. You emphasize that you care, and that you think you can work out a plan to help,” Wissow says.

Pediatricians in the study learned tips on how to manage patient interactions to keep them from going on too long. For instance, they learned to help patients focus on a single issue, offering a longer follow-up visit to discuss other problems. While it may seem counterintuitive, taking time to address mental health issues during an office visit can actually save time in the long run. Wissow pointed out that children with untreated mental health issues tend to be “sticky” patients—they require office visits more often than others. Effective mental health treatment might solve their problems and thereby take pressure off the pediatrician’s schedule.

—KK

In Memoriam

Jo Eirik Asvall, MD, MPH ’69, retired from a distinguished career at WHO/Europe, died on February 10. Born in 1931 in Norway, he began his WHO career in malaria eradication. As WHO regional director for Europe from 1985 to 2000, he refocused the organization on public health, targeting local communities across the now 53 countries in the European region, shepherding the development of the WHO Health for All strategy.

Nancy Fink, MPH ’79, senior scientist in the Department of Epidemiology, died on July 27 after a long illness. Born in 1952, she was part of the Hopkins family for nearly three decades. She started her academic career as a research associate in Epidemiology, followed by seven years in the Department of Ophthalmology at the Johns Hopkins School of Medicine, and concluded by returning to Epidemiology. She was promoted to senior scientist in 2007.

Melvyn Thorne, MD, MPH ’68, a founding member of the Department of International Health, died on August 16 at age 77. Having joined the faculty in 1972, he was an expert on management issues in primary health care and taught generations of students the fundamentals of health services management and family planning programs in developing countries. In addition to serving on the faculty, he consulted for various WHO programs and in 1964 was the first Peace Corps doctor in Morocco.