SAVE THE DATE
The Bill and Melinda Gates Institute for Population and Reproductive Health is co-hosting with the Ministry of Health, Government of Senegal:
International Conference on Family Planning: Research and Best Practices
Dakar, Senegal
November 29 – December 2, 2011
www.fpconference2011.org/

NEXT ISSUE TECHNOLOGY AND PUBLIC HEALTH
Text messages. Smart phones. Electronic health records. mHealth. GIS. High-performance computing cores... Technology is revolutionizing our world—and public health—at an ever-accelerating pace. Our upcoming special issue will document how high-tech (and low-tech) strategies are preventing disease and saving lives. Look for it in January 2012.
Features

24 Staying Positive
The advent of antiretroviral medications has meant an HIV diagnosis is no longer a death sentence. People now are living with the disease for decades. But are they aging faster than their peers?
By Mat Edelson

32 Tough Oil
The coming era of petroleum scarcity—“peak oil”—will have profound effects on public health.
By Mike Field

36 International Health at 50
A half-century ago, a handful of visionaries realized that the world’s health problems would never be solved by simply exporting Western medicine. They created a better way.
By Jackie Powder

40 Fall and Rise
The world changed on September 11, 2001. And so did public health.
By Christine Grillo

Departments

1 Open Mike
The many legacies of 9/11.

4 Welch Wanderings
The perils faced by young gamblers; vitamin A in context; bacteria vs. malaria; protecting girls from transactional sex; welcoming IPS; risk on four wheels; “Hopkins Honey.”

14 Global Health Snapshot: Population
Late in October, we’ll be welcoming our 7 billionth fellow human. What does this mean for our planet and our future?

22 Frontiers of Public Health: Vaccine Booster
With his four decades of rigorous evidence collection and personal experience, pediatrician Neal Halsey advises parents to take advantage of lifesaving vaccines.

44 Accolades
When it comes to helping volunteer firefighters, major league baseball players or school kids, Keshia Pollack seeks environmental solutions. Plus faculty honors.

47 AfterWords
An unwanted guest brings intimations of mortality.
It's certainly no secret that our species is skilled at procreating.

By the end of October this year, humans will hit a major milestone: An estimated 7 billion of us will occupy the planet. By 2100, the total will probably reach more than 10 billion, according to UN demographers.

The latest population projections came as a bit of a surprise, says Amy Tsui, PhD, MA, director of the Bill and Melinda Gates Institute of Population and Reproductive Health. Until May of this year, projections had estimated that the population would level off at around 9 billion in 2050. While previous models incorporated a trajectory that had birth, or fertility, rates worldwide following the downward trend begun in the 1970s, explains Tsui, the new estimates show the pace isn't guaranteed.

“Fertility hasn't steadily declined in high-fertility countries as much as expected,” she says, especially in sub-Saharan African countries such as Niger and Mali. “It doesn't take much with fertility for a population to continue to grow.”

That's because momentum can continue to drive population numbers up, even if the growth rate itself drops. “It's like compound interest on savings in a bank,” Tsui explains. “Once you have births in a population, those people reach childbearing age and have births themselves.” If momentum picks up, she explains, more births translate into more youth—a group that bears much of the brunt of slow economic development and public health problems.

While Niger and most of its sub-Saharan neighbors have started to recognize the value of slowing population growth and are actively implementing measures to do so, that's not the case everywhere. Ugandan president Yoweri Museveni, whose country has a birth rate of about 6.5 children per woman, is encouraging birth rates to stay high. “He believes that the population should grow because it's an important market opportunity—the more people you have, the more consumers you have,” Tsui says. “But he ignores the costs in getting there.”

One visible sign of unrestrained growth is immigration tensions, says Duff Gillespie, PhD, a professor in Population, Family and Reproductive Health (PFRH). Most of the rampant growth is occurring in Southern Hemisphere countries that can ill afford it, where economic and educational opportunities are slim and poverty is harming health. Many of those disenfranchised people are now seeking opportunity in wealthy Northern Hemisphere countries, much to the chagrin of some people there.

“It is definitely going to be a challenge to get the socioeconomic development in the South that the North has enjoyed for some time, and to do it as quickly as possible,” Gillespie says.

The easiest way to prevent population growth from causing severe problems is to put a stop to it, says Stan Becker, PhD, a PFRH professor. “The only sustainable population growth in the long term is zero,” he notes. “The question is how we get there.”

One proven solution is improving education, especially for girls and women, explains Becker. Education typically leads to later marriage and viable careers, giving women options other than being housewives and mothers. That's been the case in the BRIC countries—Brazil, Russia, India and China—which have all experienced unprecedented economic growth in the last few decades, as well as lower birth rates.

Another obvious solution is providing access to contraception, he adds.

—Christen Brownlee

“The only sustainable population growth in the long term is zero. The question is how we get there.” —Stan Becker

—Christen Brownlee
57 million people die worldwide every year

140 million people born every year

227,000 people added to the world every day

47 average life expectancy worldwide in 1950. It's now 68.

5 average number of children per woman worldwide in 1950. It's now 2.6

7.1 average number of births by women in Niger

1.7 average number of births by women in industrialized countries

3.41 billion people living in rural areas in 2009

3.42 billion people living in urban areas in 2009

7 billion 2011

6 billion 1999

5 billion 1987

4 billion 1974

3 billion 1960

2 billion 1927

SOURCES: PRB, WHO, UN
Measles cases in the U.S. hit a 15-year high this year. Pertussis (whooping cough) resurfaced in the U.S. last year, especially in California where there were 9,100 cases and 10 deaths. These and other outbreaks are related to parents withholding recommended vaccines and obtaining exemptions for their children from childhood immunizations required for attendance at schools, says Neal Halsey, MD, director of the Bloomberg School’s Institute for Vaccine Safety. Halsey has forged his convictions about vaccine safety and effectiveness through 40 years of rigorous evidence reviews and personal observation. In 1971, he witnessed measles tear through the pediatric ward of a Nicaraguan hospital, infecting young patients and killing two children. “That was an eye-opener to me about how severe this disease could be,” says Halsey, now an International Health professor. In a summer interview with Brian W. Simpson, editor of Johns Hopkins Public Health, Halsey reflected on the persistence of vaccine-preventable diseases, parents concerned about vaccine risks, new vaccines and the difference between vaccination and immunization.
Are recent pertussis and measles outbreaks in the U.S. isolated cases or is the system failing?
We have high immunization rates in this country; well over 90 percent of children have received the recommended vaccines—over 95 percent by the time they enter school. But the system isn’t perfect, and the system isn’t getting children immunized as timely as they should. And with delays in immunization, you have enough susceptible children that can accumulate that you get disease outbreaks.

Can high rates of exemptions actually endanger children who have been immunized?
Yes. The vaccines are not perfect and so not everybody who gets vaccinated gets full protection against the disease. And so some remain susceptible. More importantly, there are children who have true medical contraindications to getting vaccinated. Children who have diseases [like leukemia] can’t get the live vaccines like measles, but we need to protect those children by immunizing everybody else. And those children should be allowed to go to school—and to go to school without fear of getting exposed to a disease that could kill them.

Are most cases of measles today in the U.S. homegrown or imported?
We do not have continued transmission of measles in the U.S. But we get these repeated introductions from travelers. And that’s going to continue until measles is eliminated everywhere.

When you look back over your career in vaccines, what’s most surprised you?
I think the thing that has most surprised me—and it’s a pleasant surprise—is the introduction of new vaccines like the hepatitis B vaccine and universal use vaccines against Haemophilus influenzae, pneumococcal disease and rotavirus. When I was an intern, I spent more than half the time taking care of children with meningitis from Haemophilus influenzae or pneumococcus. And now those diseases are largely disappearing due to the introduction of those two vaccines.

What’s the best way to reach parents who have genuine concerns about vaccines?
If they raise questions, we have to talk about those. It’s our job to help separate the fact from fiction. We need to have our public health authorities and physicians armed with the information to show parents what’s true and what’s not true. And they need to be aware of the potential severe complications that are prevented by these vaccines. That’s what’s missing from the experience of most young parents. They don’t see children with measles or severe pertussis.

Does it frustrate you when people avoid such vaccines for their children?
Yes. It is very frustrating to hear people perpetuate myths and misunderstandings about vaccines. And I can tell you from having talked to a few parents of children who have developed these diseases that, to a person, they said, “We had no idea it could be this bad.” That influenza could lead to death, which does occur. Or that not getting a vaccine could result in severe disease. I saw that repeatedly with measles. Many parents today think pertussis is a disease of the past, but it’s not true. It’s here.

How would you rate the public health efforts thus far?
I think we’re doing a very good job in this country, but it’s not perfect and it would be nice if all children who were eligible to receive vaccines did receive them and receive them on the recommended schedule. But the reality is, there are some delays and there are some refusers. But we need to stick with those people and to help them through the process. Some will change their mind. Some won’t.

What new vaccines are in the pipeline?
There are a number of vaccines in development that have promise for being licensed and used on a widespread basis. Here at Hopkins, Anna Durbin is working on vaccines to protect against dengue infections. Ruth Karron is doing studies on [vaccines for] respiratory syncytial virus, a major cause of respiratory disease in children. We have the potential for other vaccines to protect against diseases such as group A streptococcal infections, staphylococcal infections, malaria and perhaps HIV. There is the potential for other vaccines to protect against cancer. I wouldn’t say that those are likely to be licensed within the near future. There is also the potential for vaccines to protect against autoimmune diseases like multiple sclerosis and rheumatoid arthritis.

Is there a difference between “vaccination” and “immunization”?
Yes. The terms are used interchangeably by many people, and that’s probably okay. Technically, vaccination is administering a vaccine. Immunization is the process of administering a vaccine that results in an immune response that’s protective.

Therefore, an immunization is a successful vaccination.
That would be one way to put it.
Firefighters brave a lot of risks in their jobs. But the biggest danger they face at work isn’t from smoke inhalation or a collapsing roof. It’s suffering a heart attack—the leading cause of death for on-duty firefighters.

It’s the sort of problem that interests Keshia Pollack, PhD ’06, MPH, assistant professor of Health Policy and Management. With funding from the Department of Homeland Security, she partnered with the National Volunteer Fire Council to study causes of death for on-duty firefighters.

Pollack, who is director of the Bloomberg School’s Occupational Injury Epidemiology and Prevention Training Program, is interested in changing human environments to improve health. That can include preventing injuries by changing the “built environment”—the human constructed part of the environment. It also includes changes that help people engage in healthier behavior.

To help firefighters and others, Keshia Pollack goes environmental.

**Steven S. An**, PhD, assistant professor, Environmental Health Sciences (EHS), was appointed to the Nominating Committee of the Respiratory Structure and Function Assembly of the American Thoracic Society.

**Cheryl Anderson**, PhD, MPH, MS, assistant professor, Epidemiology, was appointed to the Institute of Medicine’s Food and Nutrition Board.

**Robert Black**, MD, MPH, the chair and Edgar Berman Professor of International Health, is to receive the Raulin Award from the International Society for Trace Element Research in Humans (ISTERH). The award recognizes lifetime achievement in research on trace elements.

**Chumo**, a Kiswahili film by the COM-MIT project, led by the **Center for Communication Programs** (CCP), won best director and best actress honors at the 2011 Zanzibar International Film Festival. The film was also an official selection of the Durban International Film Festival and the Pan African Film Festival. **Tchova Tchova Historias de Vida**, a CCP-designed methodology to promote gender equity, HIV/AIDS prevention and treatment adherence in Mozambique under a three-year PEPFAR-funded project, was selected as a finalist for the AfriComNet 2011 Annual Award for Excellence in HIV and AIDS Communication in Africa in the Interpersonal/Community category.

**Josef Coresh**, MD, PhD ’92, MHS ’92, professor, Epidemiology, and director, George W. Comstock Center for Public Health Research and Prevention, was named chair of the Steering Committee of the Chronic Kidney Disease Prognosis Consortium. He was also the plenary speaker at the 2011 Annual Meeting of the American Association for Clinical Chemistry.

**Ciprian Crainiceanu**, PhD, associate professor, Biostatistics, was elected program chair of the American Statistical Association’s Section on Nonparametric Statistics. He begins his term on January 1, 2012.
“Prospective Study of Obstructive Sleep Apnea and Incident Coronary Heart Disease and Heart Failure: The Sleep Heart Health Study” was chosen as Best Paper in the Population Science category by the journal Circulation. Its authors include Marie Diener-West, PhD ’84, Helen Abbey and Margaret Merrell Professor of Biostatistical Education, and chair of the MPH Program, and Gayane Yenokyan, MD, PhD ’09, MPH, MHS ’09, assistant scientist, Biostatistics.

Anna Durbin, MD, associate professor, International Health, recently received the 2011 National Institutes of Health Director’s Award.

Janice Evans, PhD, associate professor, and Paul S. Miller, PhD, professor, both Biochemistry and Molecular Biology faculty, were awarded an NIH Exploratory/Developmental Research Grant under the Research Enhancement Awards Program.

Andrea Gielen, ScD ’89, ScM ’79, professor, Health, Behavior and Society (HBS), and director, Center for Injury Research and Policy, received the Research or Public Health Program Health Impact Award at the 2011 joint annual meeting of the Safe States Alliance and the CDC Core I and II State Injury Grantees.

Mathuram Santosham, MD, MPH ’75, professor, International Health, director, Center for American Indian Health (CAIH), received the Director's Special Recognition Award for University/Educational Partnership from the Indian Health Service. The award honors Santosham's leadership in helping to found CAIH and his more than three decades of childhood immunization research. “As a result of his work hundreds of American Indian and Alaska Native children's lives are saved each year from life-threatening diseases such as meningitis and childhood pneumonia,” said Indian Health Service director Yvette Roubideaux.

Ellen Silbergeld, PhD, professor, EHS, received the Lifetime Achievement Award, Metals Specialty Section, from the Society of Toxicology.

Frances Stillman, EdD, EdM, associate professor, HBS, received a Merit Award from Vietnam’s Ministry of Health for her contributions to the Reduce Smoking in Vietnam Partnership (RSVP).

Senior Faculty Named Gilman Scholars

Peter Agre, Diane Griffin and Alfred Sommer are among Johns Hopkins University’s first Gilman Scholars. The distinction honors faculty who exemplify the University’s highest ideals. Agre, MD, is director of the Johns Hopkins Malaria Research Institute. Griffin, MD, PhD, is the Alfred and Jill Sommer Chair of Molecular Microbiology and Immunology.

Adnan Hyder, MD, PhD ’98, MPH ’93, associate professor, International Health, received the Aron Sobel Guardian Award from the Association for Safe International Road Travel.

A joint WHO/PLoS panel selected “A Field Training Guide for Human Subjects Research Ethics,” from the October 5, 2010, issue of PloS Medicine, for inclusion in a special collection to support the key messages in the World Health Report 2012. Its authors include Maria Merritt, PhD, assistant professor; Alain Labrique, PhD ’07, MHS ’99, MS, assistant professor; Joanne Katz, ScD ’93, MS, professor; and Keith West, DrPH ’87, MPH, ’79, RD, George G. Graham Professor of Infant and Child Nutrition. All are International Health faculty.

Mathuram Santosham, MD, MPH ’75, professor, International Health, director, Center for American Indian Health (CAIH), received the Director's Special Recognition Award for University/Educational Partnership from the Indian Health Service. The award honors Santosham's leadership in helping to found CAIH and his more than three decades of childhood immunization research. “As a result of his work hundreds of American Indian and Alaska Native children's lives are saved each year from life-threatening diseases such as meningitis and childhood pneumonia,” said Indian Health Service director Yvette Roubideaux.

Quinn Wins Thomas Parran Award

Thomas Quinn, MD, MS, professor, Medicine, International Health, Epidemiology, MMI, and director, Johns Hopkins Center for Global Health, received the 2011 Thomas Parran Award from the American Sexually Transmitted Diseases Association for his distinguished and continued contributions to the field of sexually transmitted disease (STD) research. He received the award at the International Society for STD Researchers Conference in Quebec City, Canada, on July 13.

Quinn has investigated the epidemiology, pathogenesis and clinical features of HIV/AIDS in more than 26 countries. His initial investigations documented the importance of STDs in facilitating the sexual transmission of HIV/AIDS globally. He has worked to establish clinical care programs for HIV and STDs in developing countries and co-founded the Academic Alliance for AIDS Care and Prevention in Africa.

At the National Institute of Allergy and Infectious Diseases (NIAID), he serves as a senior investigator and head of the section on International HIV/STD Research, and as associate director for International Research.
New Associate Dean for External Affairs

Joshua Else began his tenure as the Bloomberg School’s new associate dean for External Affairs on July 18. Else will oversee the School’s fundraising, alumni relations and communications programs.

“I am very pleased that Josh has joined us at the Bloomberg School of Public Health,” says Dean Michael J. Klag, MD, MPH ’87. “He is a proven leader, and he understands our School mission: preventing illness and saving lives—millions at a time.”

After his first month on the job, Else says he’s been amazed by the diverse efforts of the faculty and students. “The impact of the work at the Bloomberg School is changing and saving lives every day,” says Else. “Not only do the faculty and students exude tremendous passion for their work, but the donors and volunteers I have met feel the same passion. They truly want to help change the world.”

For the past six years, Else led development and external affairs as associate dean of Johns Hopkins University Sheridan Libraries and Museums. There, Else oversaw the successful completion of a $50 million goal in the University’s Knowledge for the World campaign. Notably, during the campaign’s final year, Else conceived and implemented a Hopkins-wide initiative to secure private funding for the $30 million Brody Learning Commons. The Homewood campus facility is scheduled to open in the fall of 2012.

Before coming to Johns Hopkins, Else spent three years leading the major gifts program at the American Red Cross, in Washington, D.C. His background also includes three years in the private sector as general manager of a publishing company in Honolulu and four years at his alma mater, Wake Forest University, as director of development for the law school and director of Annual Support for the university.

Else can be reached at 410-955-5194 or jelse@jhsph.edu.

Staying Positive (continued from page 31)

Medicine. “Having HIV and hepatitis C causes liver disease progression that’s on the order of sevenfold faster than in HIV-uninfected people with hepatitis C.”

Lucas adds that keeping a close eye on kidney disease, his prime area of study, is equally important. “There’s no question chronic kidney disease is increased with HIV infection, and potentially, its treatments. The order of magnitude in what I’d call well-characterized HIV-positive and HIV-negative populations is threefold to fivefold higher risk, what I’d call unequivocal. In African-Americans in particular, the risk of end-stage kidney disease is increased at least 10-fold with HIV infection.”

But perhaps the strongest recommendations for screening have to do with finding those estimated 21 percent of infected Americans who don’t know they are already HIV-positive, as well as people who don’t perceive themselves to be at risk, notably sexually active elders. The over-50 population is the fastest growing group of those newly infected with HIV. And while drug toxicities have greatly dropped, there’s evidence that the infection is harder to combat in older populations, perhaps because their immune systems have been compromised by age. While the CDC recommends HIV testing up to age 64, John Bartlett, MD, professor of Infectious Diseases at Hopkins Medicine, notes the American College of Physicians suggests upping the age of testing to 75.

One thing is clear: Many sexually active elders are surprised that HIV could possibly affect their lives. Bloomberg School epidemiologist and physician Kelly Gebo says, “I’ve been to several senior centers and [asked], ‘How many people here have had a high-risk HIV behavior’ and they’ve had no idea. Then I ask, ‘How many people here have had unprotected sex?’ and many of them raise their hand. I then say, ‘Well, all of you have been at risk.’ And they look at me like ‘what, are you crazy? Only reckless young people or drug users get that. Not people who go to my church!’”

Gebo, MD, MPH, an associate professor in Medicine and in Epidemiology, adds that “getting people diagnosed at an older age is often hard because providers and geriatricians may feel less comfortable asking about high-risk behaviors. There’s often a ‘don’t ask, don’t tell’ principle. I ask everyone between 12 and 112, ‘Are you having sex? Anal, vaginal, or oral? With protection? With men, women, or both?’ When you ask [older] patients this, without judgment, they answer you.”

While the risks for premature aging and certain diseases are still being assessed and debated, graying patients, meanwhile, are doing their best to make life with the infection both long and vital.

“I’m extremely vigilant, and unless an asteroid drops on my head, I think I’ll be around here a long time,” laughs Chris Camp.

“And if I live to be 85, would they say I died of AIDS?”
The Unwanted Guest

I spent the evening of August 11—my birthday—with Chris Camp at his north Baltimore home. With his shock of white hair and a hefty paunch, Chris could be mistaken for a grandfatherly septuagenarian. Yet he’s only 55, as writer Mat Edelson notes in our cover story, “Staying Positive” (page 24). For more than 25 years, Chris and a rotating cast of antiretroviral medications have battled the human immunodeficiency virus that invaded his body and refused to leave. He calls the virus his “Unwanted Guest.”

Art director Robert Ollinger, photographer Chris Hartlove and I had driven to Camp’s home to take photos and shoot some video. After we’d been there a while, Chris brought out an ornate, leather-bound album. “Chris & Jack” painted in gold letters topped the front cover. He leafed through the photos and documents from the 1996 commitment ceremony with his partner. “I was blonde then,” Chris said. In the photos, he appeared trimmer, fitter and much, much younger. Many more years than 15 seemed to separate the two versions of Chris. The Unwanted Guest and the powerful daily meds had written great changes across his features.

As a society, we have a finite capacity for concern. And a powerful propensity to affix a “solved” banner to knotty problems. We want to think antiretrovirals are the solution to HIV, that the drugs mean the problem is over. In developed countries, HIV is referred to as a chronic disease, a term that somehow saps the disease of power and menace. Indeed, many on antiretrovirals can lead more or less normal lives. Yet others like Chris Camp will remind you it is still very much a disease that exacts its toll every day.

On the drive home, I thought about Chris’s fight, how the disease has diminished his life and killed so many others, how we are more fragile than we like to admit. It being my birthday, I couldn’t help but ponder my own mortality as I rolled down Cold Spring Lane.

A chorus of Happy Birthdays greeted me when I arrived home. My wife and kids had made a lopsided chocolate cake for me and pinned it with several tilted candles. (I noted, a tad morosely, that I’m way past the age of having an individual candle for each year.) Paising a moment from devouring their own slices, the kids watched me expectantly. They wanted to see what I thought of their creation. I took a forkful.

The moment, like the chocolate in the cake, was bittersweet.

BRIAN W. SIMPSON
Editor, Johns Hopkins Public Health
bsimpson@jhsph.edu
PS – Chris Camp is the latest fascinating individual I’ve met in the past 10 years as the magazine’s editor. In future columns, I plan to reflect on stories like Chris’s and add the personal to public health.

Letters to the Editor

Saving on Vaccines, Dosing for Sex
“Science of the Sexes” [Spring 2011] reminds me of my own experience conducting clinical trials in the 1980s on the safety and efficacy of a rabies vaccine in Lahore, Pakistan. I found that females had twice the titres of immune globulins after vaccination as compared to males. I shared this information with the dean of the Institute of Public Health and a faculty member in Immunology at a local medical school. The latter gave me a copy of a published paper originating from Johns Hopkins University, explaining the link of the immune system with X chromosome.

By adjusting dosage for sex, the costs of expensive vaccines can perhaps be brought down—an important lifesaving measure in developing countries.

Dr. Ali Raza Chughtai
Lahore Cantonment, Pakistan

Bullying Revisited
I sent this article [“Darkness Visible,” Spring 2011] to my middle schooler’s principal, and she shared it with her school counseling team. The school is going to discuss starting a student club similar to the one at Central Middle School. So I think it’s an inspiring article as well!

Teresa Wonnell
via Magazine Comments

What an inspiring article. I have a child ready to enter high school. I am thankful bullying is no longer looked at as a rite of passage.

Cathy Readmond
via Magazine Comments

What Next, Tofu Tuesdays?
More government control? Meatless Monday? Then they will tell us what to eat on Tuesday. Maybe Tofu Tuesday, White Meat Wednesday, etc. We have been able to figure out what to eat for years. Let’s get back to being America. People making their own choices and taking responsibility for our actions and suffering the consequences if we don’t. That is our right. Some people are just too stupid to get out of our way.

Cheryl
via Magazine Comments

This Magazine Stinks
Thank you for continuing to send me the magazine. However, I must bring to your attention an aspect of the magazine that is not desirable—its smell. I don’t know what printing process and materials that you use, but it smells like a freshly opened can of paint and continues to smell like that for weeks afterward. The smell is so undesirable that I throw it away as soon as possible, rather than keep it around and then recycle it.

Suzanne Marks, MPH ‘94, MA
Atlanta, Georgia

Editor’s Note: We print with soy ink and 50 percent recycled fiber. This is our first odor complaint.

Intrigued? Irate? Impressed? Send us your comments: editor@jhsph.edu.