Jean Magloire, a health activist, faults many Haitians for squandering time and money playing dominoes and the Haitian lottery instead of saving up for or digging latrines themselves.

Ivers, though, feels conflicted. She supports the mantra of responsibility. But when she relayed that line at a community meeting, she says people laughed: “They asked me, ‘How do we even get started?’” Half of all Haitians live on less than $1 per day, and goods, even food, are surprisingly expensive. Saving even $100 seems daunting.

Campa says PIH will make exceptions and build latrines for widows, people with AIDS, and other vulnerable groups. But for the most part it respects the government’s wishes and focuses instead on clinics, hygiene campaigns, and delivering cholera vaccines.

**PLANS TO IMPROVE WATER** and sanitation face other hurdles. Few aid groups—PIH being an exception—focus on much beyond relieving immediate needs. And while aid money is still flowing to Haiti, funds have a history of disappearing there. After the earthquake, the United States gave Haiti $2.25 billion in aid. But no one knows how $1.5 billion of that was spent, says Vij Ramachandran, a fellow at the Center for Global Development in Washington, D.C. Given Haiti’s history of corruption, she adds, at least some was probably stolen.

“Unless aid is invested in building local institutions and strengthening the government,” Ramachandran says, “you will not see any real change.”

Cultural habits can also slow efforts to improve public health. Women traditionally gather drinking water in Haiti, but because it’s women’s work, such chores often take low priority. At one fountain near Mirebalais, despite the quickly setting sun, women waited around with a dozen empty jugs while teenage boys washed their motorcycles. Bad hygiene habits also persist. Many Haitians say that cholera convinced them to start washing their hands after defecating and stop drinking irrigation water in the fields. But others admit they still don’t bother with such niceties.

Rejouit, the health commissioner, insists that Haiti can eradicate cholera. Other doctors remain pessimistic, especially near St. Marc and other hard-hit districts. Still others say they are hopeful, but they realize that hope is about all Haiti has ever had. One of them, Patrick Ulysse, a health coordinator for PIH, nodded at the prospect of a cholera-free Haiti. “I’m optimistic,” he said. He then paused and half-smiled: “I have to be.”

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**China tries to kick its salt habit**

A country with one of the world’s saltiest cuisines confronts its hypertension problem

By Mara Hvistendahl, in Shanghai, China

China has long had a love affair with salt. Since about 2200 B.C.E., when the country first produced it, salt has been an important preservative for vegetables and meats. Entire regional cuisines are described simply as “salty,” and individual dishes have monikers like “salt-and-pepper pork.” In Tibet, locals drink a salty yak butter tea in place of water.

All told, the average rural Chinese citizen consumes 12 grams of salt daily, according to the 2010 Global Burden of Disease study; the average American takes in 9 grams, while the daily maximum recommended by the World Health Organization (WHO) is 5 grams. “High salt intake is part of Chinese food culture,” says Wu Yangfeng, a cardiovascular specialist at the Peking University Clinical Research Institute who heads the George Institute for Global Health, China, in Beijing. It is also an acute health problem—but one that researchers believe can be tackled.

Salt is a major contributor to an alarming rise in hypertension in China’s rapidly aging population. Some 54% of Chinese adults aged 45 and older now have hypertension, according to the China Health and Retirement Longitudinal Study, among the highest rates in the world. Hypertension is a risk factor for stroke—the leading cause of death in rural China in 2010—and other cardiovascular diseases.

As the country develops, Chinese are also eating more meat and engaging in less physical activity, which drives the rise in hypertension and chronic disease. Those lifestyle factors are hard to combat, especially in a people tasting modern life for the first time. Meanwhile China’s overburdened health care system is ill-equipped to treat hypertension directly, given the legions of patients. An estimated 40 million Chinese aged 60 and over with the condition haven’t been diagnosed, and of those who have been, only a small proportion get their blood pressure under control. But researchers say reducing China’s salt consumption is feasible—and could have a major impact.

In fact, the country is an ideal place to try an intervention, says Bruce Neal, an epidemiologist with the George Institute...
and the University of Sydney in Australia. In developed countries, most salt is consumed through processed food or in restaurants; efforts to fight hypertension have focused on pressuring the food industry to lower salt content—often unsuccessfully. In China, salt is primarily added to meals during home cooking or at the table, so prevention messages can target the individual. And the salt industry is controlled by a state monopoly, meaning that there are only a few distributors. “That’s really important if we want to intervene,” Neal says.

There is still debate about whether it’s useful to lower salt intake below 6 grams a day (Science, 24 May 2013, p. 908), but most scientists agree that bringing down China’s very high levels is a relatively cheap, effective public health intervention. Based on disease models from elsewhere, Wu and colleagues estimate that reducing the average Chinese person’s intake by a mere gram a day could save 125,000 lives a year.

But whether such a behavioral intervention is feasible on a large scale—and to what degree it would actually reduce cardiovascular disease—hasn’t been carefully studied. A study by the George Institute published in 2007 found that introducing a low-sodium salt substitute lowered blood pressure in 608 high-risk adults in northern China, but it didn’t look at outcomes like stroke. A study in Taiwan did measure such health effects, but it involved just a few thousand men living in one retirement home and didn’t control well for errors, Neal says.

Neal and Wu are the lead investigators of a huge randomized controlled trial to test the health impact of salt reduction among a broader group of people who live and cook at home. The China Salt Substitute and Stroke Study has recruited 21,000 participants with a history of hypertension or stroke in more than 600 villages in northern China and Tibet. Since early July, participants in some villages have received a salt substitute in which sodium chloride is partially replaced with potassium chloride, which has been shown to lower blood pressure; these people also receive regular advice on lowering salt intake. Patients in control villages use normal table salt and receive advice only at the start of the study. Over the next 5 years, investigators will record stroke and other cardiovascular events, while urine samples will reveal changes in sodium and potassium intake.

The study comes at a time when hypertension and cardiovascular disease are already firmly on the Chinese government’s agenda. A spate of health care reforms introduced in 2009 (Science, 1 February 2013, p. 505) includes free blood pressure checks and partially subsidized drugs for hypertension patients. The country has set a target of reducing salt consumption to 9 grams per person by 2015. If the study shows that using the salt substitute can bring down disease, Wu and Neal plan to lobby government leaders to introduce a substitute nationwide and subsidize its manufacture. (Now, producing the new substance can cost up to twice as much as regular salt.) In their vision, shops would offer a subsidized salt substitute alongside regular salt.

Of course, people would actually have to buy and use the substitute. Neal says that an alternative strategy would be to convince the salt industry to gradually reduce sodium content in China’s entire salt supply—a goal that may be possible because of the salt monopoly.

Other countries should pay attention, says Feng He, an epidemiologist at Queen Mary University of London’s Wolfson Institute of Preventive Medicine. WHO estimates that 80% of cardiovascular deaths occur in low- and middle-income countries; in many of them, hypertension patients can’t afford treatment, so prevention is paramount. Salt substitutes may prove particularly useful elsewhere in Central and East Asia, where sodium intake is among the highest in the world—and where, like in China, consumers add much of it to their diets themselves. It may be a tradition that’s well worth breaking. ■
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