ing rebuilt. A new wave of land concessions have been granted to multinational corporations seeking to extract Liberia's mineral and agricultural wealth. Yet investment in the country's medical infrastructure languishes. Liberia has fewer than 200 doctors for a population of 4 million. It is poorly equipped to deal with the current public health crisis. Remembering this history can help us understand why the current Ebola epidemic — and the ecology of fear associated with it — is unfolding as it is.

My dinner hosts on the Liberia–Guinea border knew of Ebola and its risks long before the disease made Western headlines. They were not ignorant. Their fears, like my own, were grounded in past experiences and present circumstances.

But we shared more than fear. We also shared a common history, one that has bound the United States and Liberia since free blacks from America first settled on West African shores in the 1820s.

And the laughter we shared that day, when a fearful white American asked the question, "Bush meat?" spoke to a recognition not of difference but of a shared humanity.

In this moment of crisis, fears arising from difference and ignorance of the historical and cultural contexts that underlie mistrust create a toxic ecology in which the Ebola virus thrives and spreads.

As of mid-September, total international pledges for Ebola aid amount to approximately $338 million.[3] Personnel from the U.S. Centers for Disease Control and Prevention are now on the ground in Liberia. But international aid workers will need to engage many people in local communities to win this fight against Ebola. Unless aid workers and the media understand local fears, we may fail to stem the crisis, which is devastating the economy, health, and well-being of a nation with deep historical ties to the United States.

Modern medicine owes a debt to West Africans for past sacrifices made in the advancement of global health. This week's announcement by President Barack Obama of a U.S. commitment to build 17 Ebola treatment centers in Liberia, train medical workers, provide testing kits, and offer logistic support is a welcome and needed response. It should be the start of a long-term, concerted effort to strengthen the public health infrastructure, which is critical to the region's future stability.

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

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1. Samuel Reber Jr. to The Honorable Secretary of State, 13 January 1931, 882.124A/118, 882.12, Decimal files, 1930-1939, Box 7007, RG 59. General records of the Department of State. College Park, MD: National Archives at College Park.

2. Loring Whitman Collection. Loring Whitman diary, October 26, 1926. Bloomington: Liberian Collections, Indiana University Libraries, 2014:91.

3. Financial Tracking Service. Ebola virus outbreak — West Africa — April 2014. Table A: list of all commitments/contributions and pledges as of 17 September 2014 (http://fts.unocha.org/reports/daily/ocha_R10_E16506_asof___1409171234.pdf).

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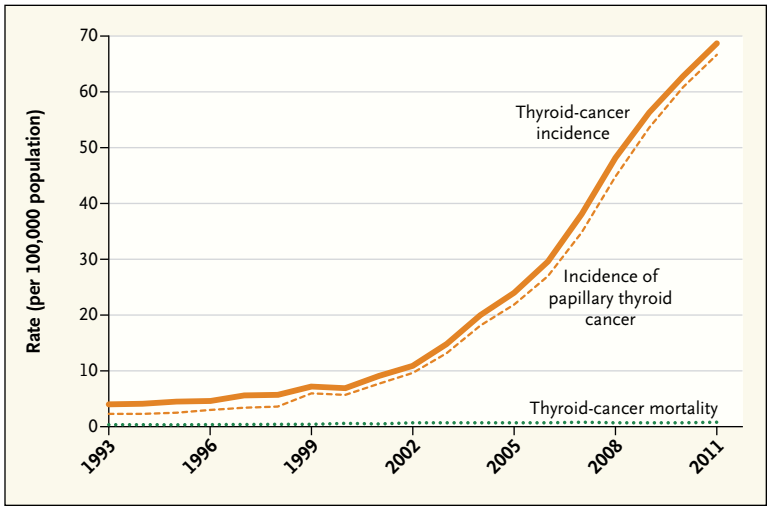
Korea's Thyroid-Cancer "Epidemic" — Screening and Overdiagnosis

Hyeong Sik Ahn, M.D., Ph.D., Hyun Jung Kim, M.P.H., Ph.D., and H. Gilbert Welch, M.D., M.P.H.

The Republic of Korea has provided national health insurance to its 50 million citizens since the 1980s. Although health care expenditures in South Korea's single-payer system are relatively low — accounting for 7.6% of the country's gross domestic product — the system is technologically intensive; among the countries in the Organization for Economic Cooperation and Development, it ranks second in acute care beds per million population, fifth in computed tomography (CT) scanners per million population, and fourth in magnetic resonance imaging (MRI) machines per million population. The country also has a well-developed data infrastructure for both vital statistics (Statistics Korea) and cancer incidence (Korean Central Cancer Registry).

In 1999, the government initiated a national screening program for cancer and other common diseases. This program now provides screening for breast, cervical, colon, gastric, and hepatic



Thyroid-Cancer Incidence and Related Mortality in South Korea, 1993–2011.

Data on incidence are from the Cancer Incidence Database, Korean Central Cancer Registry; data on mortality are from the Cause of Death Database, Statistics Korea. All data are age-adjusted to the South Korean standard population.

cancers free of charge or, for people with above-average income, for a small copayment. Although thyroid-cancer screening was not included in the program, providers frequently chose to offer screening with ultrasonography as an inexpensive add-on for $30 to $50. Many hospitals now market "health checkup" programs that include thyroid-cancer screening with ultrasonography, in addition to more technologically intensive exams (such as MRI and positron-emission tomography–CT), and many general practitioners have ultrasonography machines in their offices and commonly scan the thyroid. Both the government and the media have frequently extolled the virtues of early cancer detection.

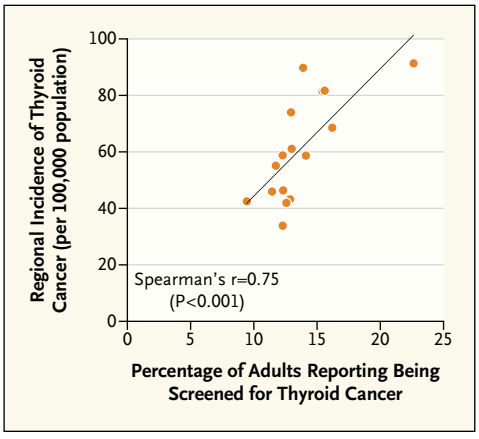
Earlier this year, a few physicians presented a different perspective, expressing concern about overdiagnosis of thyroid cancer and suggesting that screening be banned. Major newspapers picked up the story, running headlines asking "Is thyroid cancer overdiagnosed?"[1] There was also widespread broadcast coverage, including special programs devoted to the issue on all three of the country's major television networks. Yet because it is so challenging to adequately explain why early diagnosis and treatment of a common type of cancer could be problematic, thyroid-cancer screening continues to grow in popularity.

Vital statistics and cancer-registry data for South Korea illustrate the effect of screening. Thyroid-cancer incidence increased slowly during the 1990s, then rapidly after the turn of the century (see line graph). In 2011, the rate of thyroid-cancer diagnoses was 15 times that observed in 1993. This entire increase can be attributed to the detection of papillary thyroid cancer. Furthermore, despite the dramatic increase in incidence, mortality from thyroid cancer remains stable — a combination that is pathognomonic for overdiagnosis.

Variation in thyroid-cancer incidence across the country's 16 administrative regions may be explained by screening penetration (see scatter plot). In 2010, the Korean Community Health Survey (the government's annual nationwide health survey) asked adults older than 19 years of age whether they had been screened for thyroid cancer during the previous 2 years. There was a strong correlation between the proportion of the population screened in a region in 2008 and 2009 and the regional incidence of thyroid cancer in 2009. Although the aggregate correlation could be vulnerable to the ecologic fallacy, the finding of significant positive correlations in each of eight age- and sex-based groups suggests that the finding is more robust.

Thyroid cancer is now the most common type of cancer diagnosed in South Korea. More than 40,000 people in the country were diagnosed with the disease in 2011 — a figure that is more than 100 times the number of people who die from thyroid cancer, which for the past decade has been between 300 and 400 each year. Virtually all the people diagnosed with thyroid cancer are treated: roughly two thirds undergo radical thyroidectomy, and one third undergo subtotal thyroidectomy. The tumors being excised are getting smaller — at one center, the proportion of patients undergoing surgery for a tumor measuring less than 1 cm in diameter increased from 14% in 1995 to 56% 10 years later.[2] Despite guidelines recommending against evaluation and surgery for tumors less than 0.5 cm in diameter, one quarter of surgical patients now have tumors that fall into this category.

Thyroid-cancer surgery has substantial consequences for patients. Most must receive lifelong



Penetration of Thyroid-Cancer Screening (2008–2009) and Incidence of Thyroid Cancer (2009) in the 16 Administrative Regions of South Korea.

Data on thyroid-cancer screening are from the Korean Community Health Survey Database, Korea Centers for Disease Control and Prevention; data on incidence are from the Cancer Incidence Database, Korean Central Cancer Registry.

thyroid-replacement therapy, and a few have complications from the procedure. An analysis of insurance claims for more than 15,000 Koreans who underwent surgery showed that 11% had hypoparathyroidism and 2% had vocal-cord paralysis.[3]

Pathologists have long recognized the existence of a substantial reservoir of subclinical thyroid cancer. In 1947, a report in the *Journal* pointed out the discrepancy between the frequent finding of thyroid cancer at autopsy and its rarity as a cause of death.[4] It has been estimated that at least one third of adults harbor small papillary thyroid cancers, the vast majority of which will not produce symptoms during a person's lifetime.[5] As the South Korean data show, all it takes to expose this reservoir is ultrasonographic screening.

The experience with thyroid-cancer screening in South Korea should serve as a cautionary tale for the rest of the world. During the past two decades, multiple countries have had a substantial increase in thyroid-cancer incidence without a concomitant increase in mortality. According to the Cancer Incidence in Five Continents database maintained by the International Agency for Research on Cancer, the rate of thyroid-cancer detection has more than doubled in France, Italy, Croatia, the Czech Republic, Israel, China, Australia, Canada, and the United States. The South Korean experience suggests that these countries are seeing just the tip of the thyroid-cancer iceberg — and that if they want to prevent their own "epidemic," they will need to discourage early thyroid-cancer detection.

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1. Is thyroid cancer overdiagnosed? Korea Times. March 23, 2014 (http://www.koreatimes.co.kr/www/news/nation/2014/03/113_153924.html).
2. Lee SH, Kim TY, Ryu JS, et al. Trends analysis of characteristics of thyroid cancer patients in one medical center. J Korean Endocr Soc 2008;23:35-43.
3. National Evidence-based Healthcare Collaborating Agency. Research on evidence for thyroid screening service. Seoul, South Korea: NECA, August 2013. (In Korean.)
4. Vanderlaan WP. The occurrence of carcinoma of the thyroid gland in autopsy material. N Engl J Med 1947;237:221-2.
5. Harach HR, Franssila KO, Wasenius VM. Occult papillary carcinoma of the thyroid: a "normal" finding in Finland — a systematic autopsy study. Cancer 1985;56:531-8.

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National Health Spending in 2014 — Acceleration Delayed

Charles Roehrig, Ph.D.

On the basis of data from the Bureau of Economic Analysis (BEA), it was widely reported in May that U.S. health care spending during the first 3 months of 2014 grew at an annualized rate of about 10% relative to the previous quarter. It appeared, at that point, that the 5-year run of sub-4% growth that began in 2009 was ending with a double-digit bang. However, 2 months later, revised BEA data showed a dramatic change: first-quarter health spending had actually fallen at a 0.9% annual rate.

The pronounced difference between these two estimates is highly influenced by the method used to compute growth rates. Spending in the first quarter of 2014 was compared with spending in the fourth quarter of 2013, and the percent change was compounded to convert it to an annual rate. An alternative approach is to compare first-quarter spending in 2014 with first-quarter spending in 2013. Such a calculation encompasses a full year of change and generally has a superior signal-to-noise ratio.[1] Applying this method to the BEA data brings the estimates much closer together — 6.3% initially, revised to 3.5% — but the two are still different enough to beg for explanation.

Health economists have anticipated a jump in health spending