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150th Anniversary of John Snow and the Pump Handle

John Snow, M.D. (1813–1858), a legendary figure in epidemiology, provided one of the earliest examples of using epidemiologic methods to identify risk for disease and recommend preventive action (*1*). Best known for his work in anesthesiology, Snow also had an interest in cholera and supported the unpopular theory that cholera was transmitted by water rather than through miasma (i.e., bad air).

On August 31, 1854, London experienced a recurrent epidemic of cholera; Snow suspected water from the Broad Street pump as the source of disease. To test his theory, Snow reviewed death records of area residents who died from cholera and interviewed household members, documenting that most deceased persons had lived near and had drunk water from the pump. Snow presented his findings to community leaders, and the pump handle was removed on September 8, 1854. Removal of the handle prevented additional cholera deaths, supporting Snow's theory that cholera was a waterborne, contagious disease. Despite the success of this investigation, the cause of cholera remained a matter of debate until *Vibrio cholerae* was isolated in 1883.

Snow's studies and the removal of the pump handle became a model for modern epidemiology. To recognize his pioneering work, this issue of *MMWR* highlights public health actions guided by epidemiologic data to control a modern epidemic of cholera, detect and prevent adverse reactions to vaccinations, stop an epidemic of aflatoxin poisoning, and correct environmental causes of waterborne outbreaks.

Reference

1. Snow J. On the mode of communication of cholera. 2nd ed. In: Snow on Cholera. (Reprint.) New York, New York: Hafner Publishing Co., 1965. Available at <http://www.ph.ucla.edu/epi/snow.html>.

Cholera Epidemic Associated with Raw Vegetables — Lusaka, Zambia, 2003–2004

Zambia experienced widespread cholera epidemics in 1991 (13,154 cases), 1992 (11,659), and 1999 (11,327) (*1*). In response to the large outbreak in 1999, the Zambian Ministry of Health (ZMOH) urged use of in-home chlorination with the locally produced solution, Clorin[®], and the practice increased substantially. Clorin[®] had been introduced in Zambia in 1998 as part of the Safe Water System (SWS), a point-of-use water disinfection and safe-water storage strategy* launched by the Society for Family Health, in partnership with ZMOH, the U.S. Agency for International Development, and CDC. Although no outbreaks were reported during 2000–2002, cholera remained endemic. Epidemic cholera returned to Zambia in November 2003, when cases of toxigenic *Vibrio cholerae* O1, serotype Ogawa, biotype El Tor were confirmed in the capital city, Lusaka. During November 28, 2003–January 4, 2004, an estimated 2,529 cholera cases and 128 cholera deaths (case-fatality rate [CFR] = 5.1%) occurred in Lusaka. In February 2004, the Lusaka District Health Management Team (LDHMT) invited CDC to assist in an

* Detailed information available at <http://www.cdc.gov/safewater>.

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