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In Response

Dear Sir:

The letter by Yang, Wright, and Gundry¹ provides valuable information about the scope of household water treatment practices in China, thereby adding to our previous estimates.² As more countries include questions on water treatment practices to their household surveys as recommended by the World Health Organization/United Nations Children's Fund Joint Monitoring Program for Water and Sanitation, we can expect to fill in other gaps in our knowledge about the coverage of household water treatment.

As we noted in our report, however, we urge caution in relying on these estimates or attempting to project their impact on health. First, these data reflect reported practices only and are susceptible to exaggeration because of courtesy bias, as has been shown for hand washing and other behavioral interventions.³ Second, there is evidence that even households that claim to boil or otherwise treat their water before drinking it may not do so exclusively, and may drink untreated water when away from the home.⁴ Recent models using quantitative microbial risk assessment suggest that even occasional consumption of untreated water can result in exposure that largely mitigates any potential health benefit from treating water at home.⁵ Third, as Yang, Wright, and Gundry note, the current methods for collecting data on household water treatment practices do not actually assess the effectiveness of such practices in improving drinking water quality. Although studies have shown household boiling to be generally effective, large percentages of samples from households of self-reported boilers continue to be contaminated with fecal pathogens.^{6,7}

The Joint Monitoring Program for Water and Sanitation understands the potential shortcomings of using survey questions to assess household water treatment practices. They have engaged us to undertake a three-country field study to evaluate the existing methods for collecting these data. Significantly, this includes a comparison of reported practices with direct observation and with actual assays of fecal indicator bacteria from household samples. The results of this study, which will be completed by mid 2012, should provide useful information on the extent to which the current estimates

of household water treatment are impacted by courtesy bias, non-exclusive use, and sub-optimal effectiveness. These results may lead to further development and use of field-based water quality assays as part of the household surveys that are being piloted in a limited number of countries in 2012.

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REFERENCES

1. Yang H, Wright JA, Gundry SW, 2012. Household water treatment in China. *Am J Trop Med Hyg* 86: 554–555.
2. Rosa G, Clasen T, 2010. Estimating the scope of household water treatment in low-and medium-income countries. *Am J Trop Med Hyg* 82: 289–300.
3. Manun'Ebo M, Cousens S, Haggerty P, Kalengaie M, Ashworth A, Kirkwood B, 1997. Measuring hygiene practices: a comparison of questionnaires with direct observations in rural Zaire. *Trop Med Int Health* 2: 1015–1021.
4. Boisson S, Kiyombo M, Sthresley L, Tumba S, Makambo J, Clasen T, 2010. Field assessment of a novel household-based water filtration device: a randomized, placebo-controlled trial in the Democratic Republic of Congo. *PLoS One* 5: e12613.
5. Hunter PR, Zmirou-Navier D, Hartemann P, 2009a. Estimating the impact on health of poor reliability of drinking water interventions in developing countries. *Sci Total Environ* 407: 2621–2624.
6. Clasen T, McLaughlin C, Nayaar N, Boisson S, Gupta R, Desai D, Shah N, 2008. Microbiological effectiveness and cost of disinfecting water by boiling in semi-urban India. *Am J Trop Med Hyg* 79: 407–413.
7. Sodha SV, Menon M, Trivedi K, Ati A, Figueroa ME, Ainslie R, Wannemuehler K, Quick R, 2011. Microbiologic effectiveness of boiling and safe water storage in South Sulawesi, Indonesia. *J Water Health* 9: 77–585.