TABLE 1—Median Free Chlorine Levels and *Escherichia coli* in River Water After Treatment With 16 mL (8 mg/L) of 1% Sodium Hypochlorite Solution: Village Study, Homa Bay, Kenya, May 2000

	0.5 Hour After Treatment			24 Hours After Treatment		
Vessel Type	Median Free Chlorine, mg/L (Range)	No. (%) of Samples With *E coli*	Median *E coli*, CFU/100 mL (Range)	Median Free Chlorine, mg/L (Range)	No. (%) of Samples With *E coli*	Median *E coli*, CFU/100 mL (Range)
Traditional clay vessel (n = 10)	3.4 (2.0–3.5)	0/10 (0)	0 (0)	0.2 (0.1–0.4)	2/10 (20)	0 (0–20)
Modified clay vessel[a] (n = 10)	2.0 (1.4–3.5)	0/10 (0)	0 (0)	0.2 (0.0–0.7)	0/10 (0)	0 (0)
Plastic jerry can (n = 10)	3.5 (2.1–3.5)	1/10 (10)	0 (0–2)	0.25 (0.1–0.7)	0/10 (0)	0 (0)
Total (N = 30)	3.4 (1.4–3.5)	1/30 (3)	0 (0–2)	0.15 (0.0–0.7)	2/30 (7)	0 (0–20)

Note. CFU = colony-forming unit.
[a]With spigot and lid.

water from each vessel 0.5 hours after treatment. *E coli* was not recovered from water from any vessel 24 hours after treatment.

In the village evaluation, untreated river water had a baseline *E coli* count of 170 CFU/100 mL. After treatment, the free chlorine decay rate was 9% per hour in each vessel type. After 24 hours, the free chlorine level had decayed to a median of 0.2 mg/L (range=0–0.7 mg/L), with similar levels in all vessel types (Table 1). *E coli* (2 CFU/100 mL) was recovered from water from 1 (10%) of the 10 jerry cans 0.5 hours after treatment. *E coli* (range=12–20 CFU/100 mL) was recovered from water from 2 (20%) traditional clay vessels, but no jerry cans or modified clay vessels, 24 hours after treatment.

The results indicate that jerry cans and clay vessels can achieve adequate chlorine levels to disinfect turbid, contaminated source water in laboratory and household settings. The village evaluation findings suggest that disinfected water stored in traditional clay vessels is at risk for recontamination, which may result from contact with hands during water retrieval. Previous studies have found that water stored in wide-mouthed vessels typically becomes contaminated, and wide-mouthed storage vessels have been implicated in transmission of cholera.[5,6] The finding that water stored in modified clay vessels had no detectable *E coli* 24 hours after treatment suggests that water recontamination was reduced by use of the lid and spigot. The effectiveness of these vessels will be best defined by a health outcome assessment, which is under way.

For more complete data, please refer to http://www.cdc.gov/safewater. ■

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Care Seeking During Fatal Childhood Illnesses: Siaya District, Kenya, 1998

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In developing countries, the majority of the approximately 12 million fatal illnesses that occur each year among children younger than 5 years can be prevented or treated effectively by means of simple interventions.[1] In Nyanza Province, Kenya, 1 of every 5 children dies before reaching 5 years of age.[2] CARE Kenya's Community Initiatives for Child Survival in Siaya project trained community health workers in approximately 200 villages and established community pharmacies in an effort to reduce childhood mortality in Siaya District, one of the least developed areas of Nyanza Province.

The community health workers were trained to treat children with fever, cough or difficult breathing, and diarrhea; refer seriously ill children; and promote illness prevention behaviors. A year after the health workers were trained, we investigated care-seeking itineraries during terminal illnesses to identify opportunities to further reduce childhood mortality.

We identified deaths that occurred among children younger than 5 years during the period May 1 through August 30, 1998, by reviewing community health workers' monthly household registers and asking the health workers, at the end of each month, whether any children who had died in their village were not recorded in the registers. We interviewed caregivers about the deceased children's symptoms and duration of terminal illness, types of health providers consulted, and number, chronology, and timeliness of visits.

Overall, 99 deaths among children younger than 5 years were identified in the project area; we interviewed caregivers of 97 children. The median interval between date of death and interview was 29 days (range: 7–152 days). Seventy percent of the children were infants, and 44% were female. During their terminal illness, most of the children received care outside the home, yet 90% died at home, and only 6% received inpatient care at any time during the illness (Table 1).

The median duration of terminal illnesses was 7 days (range: 4 hours to 92 days). Ninety percent of the children had fever, cough or difficult breathing, or diarrhea. Caregivers usually consulted multiple health providers (mean: 3.8; range: 1–15). Caregivers consulted traditional healers most frequently (51%); 76% of the caregivers who consulted traditional healers returned to them a second time. In all, 46% of the caregivers consulted a health worker at a health facility, and 26% consulted a community health worker.

In all, 58% of the 97 children were seen by a trained provider of Western medical care (either a community health worker or a health worker at a health facility). Only 32% (18/56) of the children seen by a trained provider of Western medical care returned to such a provider for follow-up care.

No predominant reason was given for not consulting a community health worker or a health worker in a health facility. The most frequently mentioned reason for not consulting a community health worker was not knowing about such individuals (26%), whereas the reason most frequently given for not consulting a worker in a health facility was preference for traditional healers (16%).

TABLE 1—Sources of Health Care During Terminal Illnesses of 97 Deceased Children Younger Than 5 Years: Siaya District, Western Kenya, 1998

Source of Care	No. (%)
Treatment at home	
Home care (massage, fluids)	58 (60)
Tried medicines available at home	39 (40)
Consultation outside the home	
Drug vendor	42 (43)
Traditional healer	49 (51)
Untrained practitioner of Western medicine	20 (21)
Community health worker	25 (26)
Health worker at a health facility	46 (47)
Inpatient care	6 (6)
Trained provider of Western medical care (community health worker or health worker at a health facility)	56 (58)
Referred to higher level care	10 (10)
Returned for follow-up care	
Returned to a traditional healer	37 (76)
Returned to a trained provider of Western medical care	18 (32)
Returned to a drug vendor	6 (14)
Returned to an untrained practitioner of Western medicine	11 (55)

Only 10% of the 97 children were referred for higher level care. The median delay in consulting a health provider after onset of symptoms was 2 days; promptness of care seeking did not differ by type of provider consulted.

This investigation of fatal childhood illnesses involved important limitations, including possible underreporting of childhood deaths and potential recall bias in information obtained from caregivers. Because we included in the study only children who had died, we were not able to identify risk factors for death or measure the effectiveness or coverage of project interventions. However, the findings point to opportunities for further reducing childhood deaths.

First, follow-up care and referral were infrequent. Only 32% of the children seen by a trained Western medical provider returned to such a provider for follow-up care, and only 10% were referred for higher level care. Only 6% of the children were hospitalized. Better use of referral facilities might be achieved by offering community health workers and health facility staff additional in-service training in recognizing severe illnesses and in counseling caregivers to return for follow-up care.

Second, traditional healers are a potential resource for improving child survival.[3,4] Traditional healers saw half of the children who died, and 76% of the children they saw returned to a traditional healer. Dialogue with traditional healers might lead to an understanding of how they can help ensure that the severely ill children they see are also seen at a health facility prepared to offer them appropriate treatment.

Finally, community health workers, although easily accessible, are underused by caregivers of terminally ill children; only 26% of the children in our study were seen by a community health worker. The main reason given by caregivers for not using community health workers was not knowing they existed. Traditional gatherings and village meetings can enhance dissemination of information in rural Kenyan communities to increase awareness of community health workers. ■

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R. Garg led in writing the protocol, training interviewers, analyzing the data, and writing the manuscript. W. Omwomo and J.M. Witte supervised fieldwork, data entry, and data editing. L.A. Lee was a coauthor of the protocol and helped to guide data analysis. M.S. Dem-

ing was a coauthor of the protocol and helped to guide data analysis and write the manuscript.

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Monitoring Behavioral Risk Factors for Cardiovascular Disease in Russia

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In Russia, as in the United States, the leading causes of death and disability are directly associated with behavioral risk factors such as tobacco use, poor diet, inadequate physical activity, and excessive alcohol consumption.[1] As part of an ongoing collaboration between the Centers for Disease Control and Prevention (CDC) and the Russian National Center for Preventive Medicine, a telephone-based behavioral risk factor surveillance survey was developed and tested in Moscow.

The questionnaire was modeled after the American Behavioral Risk Factor Surveillance System survey[2] and gathered information on participants' demographic characteristics, health status, quality of health care, fruit and vegetable consumption, smoking status, level of physical activity, and alcohol consumption. Moreover, it included items addressing respondents' awareness of their cholesterol, blood pressure, diabetes, and cardiovascular disease status. The survey comprised 13 modules, included 51 questions, and required approximately 10 to 15 minutes per interview.

Moscow was selected because there is almost universal residential telephone coverage, results could be used to plan prevention programs for a large portion of the population, and findings would be salient to Ministry of Health officials who reside in Moscow. The Russian National Center for Preventive Medicine conducted the survey as part of its ongoing public health responsibilities, and CDC provided assistance in analyzing the data.

A random sample of 3032 residential telephone numbers was selected. Up to 15 telephone calls were made to interview an adult aged 25 to 64 years in each household, and 1693 interviews were completed (representing 69.1% of those contacted and eligible, or 55.8% of the original sample). Prevalence rates of selected risk factors are shown in Table 1. The results of the survey indicate that telephones are a feasible way to collect behavioral risk factor data in Moscow, and these data provide valuable information that can be used to plan preventive programs and evaluate their effectiveness.

This survey was a first attempt in Russia to collect, by telephone, information on risk factors related to chronic diseases. The response rate was similar to rates found for other methods, and neither respondents nor interviewers appeared to have problems in asking or responding to the questions. A number of issues must be addressed before a national risk factor surveillance system can be established in Russia. Only a few communities have adequate telephone coverage, so many areas will have to be surveyed via personal or mail-based interviews.

TABLE 1—Prevalence of Selected Self-Reported Behavioral Risk Factors and Cardiovascular Disease in Moscow: Russian Behavioral Risk Factor Survey, 2000

Risk Factor	Men (n = 542), %	Women (n = 1151), %
Current smoking[a]	62.3	25.8
Blood pressure ≥ 140/90 mm Hg	32.9	28.4
Controlled hypertension	4.3	7.8
Body mass index ≥ 25.0	50.6	51.9
Low fruit and vegetable consumption[b]	65.6	66.8
Alcohol consumption		
<7 drinks/wk	62.6	77.1
7–14 drinks/wk	15.1	0.6
>14 drinks/wk	8.3	0.4
Binge drinking[c]	14.1	0.1
Sedentary lifestyle[d]	25.0	25.2
Cardiovascular disease or symptoms[e]		
Myocardial infarction	4.6	2.6
Angina or coronary heart disease	8.7	12.2
Stroke	1.3	1.3

[a]Those who have smoked at least 100 cigarettes and currently are smoking regularly.
[b]Less than 400 grams of fruits and vegetables (other than potatoes) consumed daily.
[c]More than 5 drinks on one occasion during the month preceding the interview.
[d]Mainly sedentary at work and during leisure time and less than 60 minutes of daily walking.
[e]As diagnosed by a physician.