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Advanced Cases of Coal Workers' Pneumoconiosis — Two Counties, Virginia, 2006

This report describes 11 newly identified cases of advanced coal workers' pneumoconiosis (CWP), including progressive massive fibrosis (PMF), in working coal miners from Lee and Wise counties in southwestern Virginia. PMF is a disabling and potentially fatal form of CWP, an occupational lung disease caused by the inhalation of coal mine dust. The continuing occurrence of advanced forms of CWP emphasizes the importance of comprehensive measures to control coal mine dust effectively and reduce the potential for inhalation exposures in coal mining.

The Federal Coal Mine Health and Safety Act of 1969 mandated dust limits in the mining environment to protect the respiratory health of coal miners (1) and created a health surveillance program for underground miners subsequently administered by the National Institute for Occupational Safety and Health (NIOSH). After dust levels were lowered, data from the surveillance program documented reductions in the prevalence of CWP among active coal miners (2). Nonetheless, during 1996–2002, clusters of rapidly progressive CWP were identified among miners in certain areas of the United States, predominantly in eastern Kentucky and western Virginia (3).

The advanced cases of CWP in southwestern Virginia described in this report were identified through the Enhanced Coal Workers' Health Surveillance Program (ECWHSP), which was initiated in March 2006 through collaboration between NIOSH and the Mine Safety and Health Administration (MSHA). ECWHSP, which uses a mobile examination unit to provide respiratory health evaluations in areas easily accessible to U.S. coal miners, aims to increase miner participation in surveillance for early detection of dust-related lung disease and to target areas for prevention. Standardized questionnaires, spirometry (lung-capacity testing), and chest radiography are administered according to NIOSH-specified

procedures. Radiographs are classified by NIOSH-certified B Readers according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconioses (4).

In March and May 2006, a total of 328 (31%) of the estimated 1,055 underground coal miners currently employed in Lee and Wise counties in Virginia were examined in ECWHSP surveys. The mean age of examined miners was 47 years (range: 21–63 years), and their mean tenure working in underground coal mines was 23 years (range: 0–41 years). A total of 216 (66%) had worked at the coal face (i.e., the cutting surface where coal is sheared from the wall and dust levels typically are greatest) for ≥ 20 years. A total of 30 (9%) examined miners had radiographic evidence of pneumoconiosis (i.e., category 1/0 or higher profusion of small opacities*). Of these, 11 miners had advanced cases, including five with large opacities consistent with PMF and six with coalescence of small opacities on a background profusion of category 2.

Among the 11 miners with advanced cases, the mean age was 51 years (range: 39–62 years), the mean tenure in underground coal mines was 31 years (range: 17–43 years), and the mean number of years working at the coal face was 29 years

*The ILO classification categorizes the profusion of small opacities by comparing with standard radiographs using a 12-point scale from 0/– (normal) to 3/+ (greatest), and the presence and severity of large pneumoconiotic opacities (i.e., PMF) as stages A (least severe PMF), B, or C (most severe PMF).

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(range: 17–33 years) (Table 1). All 11 miners with advanced cases met radiographic criteria for rapidly progressive CWP (3). All reported at least one respiratory symptom, the most common being dyspnea (shortness of breath). Of the nine who had spirometry, four had abnormal results (Table 2).

Reported by: VC Antao, MD, EL Petsonk, MD, MD Attfield, PhD, Div of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: In 1969, the Federal Coal Mine Health and Safety Act established a mandatory limit on respirable dust exposure that was intended to eliminate advanced forms of pneumoconiosis among U.S. coal miners (1). Nonetheless, the findings in this report indicate that 11 miners in Lee and Wise counties, including nine (i.e., miners 3–11) who had not worked before the 1969 limit was imposed, have advanced CWP. Identification of these cases corroborated previous findings of geographic clustering of rapidly progressive disease in western Virginia (3).

Based on an epidemiologic exposure-response model developed using data from a large population of U.S. underground coal miners (5), the expected number of cases of CWP with profusion category 2 or higher can be estimated for the 328 examined miners at exposure to various levels of coal mine dust. After 1974, average dust concentrations for coal-face miners in these counties, based on measurements reported to MSHA by mine operators, was 1.2 mg/m³ (Figure). Using the age and tenure for each of the 328 examined miners and applying different levels of respirable dust exposure to high-volatile (i.e., low or medium rank) bituminous coal, the expected number of cases of category 2 or higher CWP would be 3.7 cases at 1 mg/m³ and 5.5 cases at the current permissible exposure limit of 2 mg/m³ (for coal mine dust with <5%

TABLE 1. Age and tenure characteristics of 11 miners with advanced cases of coal workers' pneumoconiosis — Lee and Wise counties, Virginia, 2006

Miner	Age (yrs)	Year began coal mining	No. of years coal mining	No. of years working at coal face*
1	62	1963	43	33
2	61	1966	40	30
3	57	1970	36	36
4	52	1973	33	33
5	52	1973	33	33
6	54	1973	33	33
7	52	1974	32	29
8	46	1979	27	27
9	45	1981	25	25
10	42	1981	24	24
11	39	1989	17	17

* The cutting surface where coal is sheared from the wall and dust levels typically are greatest.

TABLE 2. Clinical characteristics of 11 miners with advanced cases of coal workers' pneumoconiosis (CWP)—Lee and Wise counties, Virginia, 2006

Miner	Radiographic characteristics				Respiratory symptoms	Spirometry results
	Year of radiograph*	Small opacity profusion category†	Large opacity category†	Other abnormalities		
1	1977	0/0	—	—	Productive cough, wheeze, and dyspnea	Normal
	1994	0/0	—	—		
	2000	0/1	—	—		
	2006	2/2	—	ax §		
2	1974	0/0	—	—	Mild dyspnea	Obstruction¶
	1995	0/1	—	—		
	2002	0/0	—	—		
	2006	1/2	A	ax		
3	1974	0/0	—	—	Dyspnea	Normal
	2001	2/1	—	—		
	2006	2/3	—	ax		
4	1974	0/0	—	—	Wheeze and dyspnea	Normal
	1980	0/0	—	—		
	1982	0/0	—	—		
	2001	1/2	—	—		
	2006	2/2	—	ax		
5	1980	0/1	—	—	Productive cough, wheeze, and dyspnea	Obstruction
	2006	2/3	A	ax		
6	1980	0/0	—	—	Productive cough, wheeze, and dyspnea	Normal
	1982	0/1	—	—		
	2002	2/1	—	—		
	2003	1/2	—	—		
	2006	2/2	—	ax		
7	1974	0/0	—	—	Wheeze	Restriction**
	1995	1/2	—	—		
	2002	1/2	—	—		
	2006	2/2	—	ax		
8	1992	0/0	—	—	Productive cough and dyspnea	Not available
	2002	2/1	—	—		
	2006	2/2	B	ax		
9	2000	0/0	—	—	Productive cough, wheeze, and dyspnea	Normal
	2001	1/1	—	—		
	2004	1/2	A	—		
	2006	1/2	B	ax		
10	1987	0/0	—	—	Productive cough, wheeze, and dyspnea	Not available
	1995	0/0	—	—		
	2006	2/3	—	ax		
11	1992	0/0	—	—	Cough and dyspnea	Restriction
	2006	1/2	B	ax		

* Under current federal regulations, mine operators are required to offer a radiograph, free of charge, to each underground miner when first hired and again at 3 years, and to offer radiographs to all continuing underground miners once every 5 years.

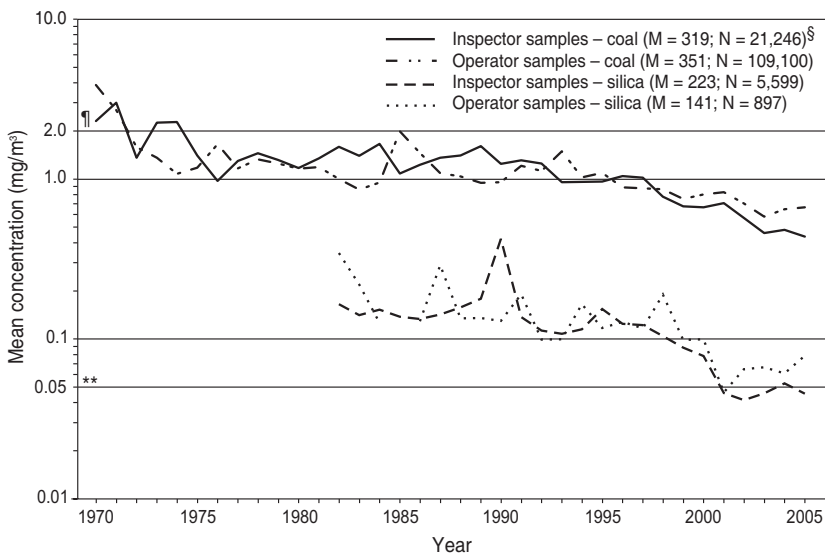
† The International Labour Office classification categorizes the profusion of small opacities by comparing with standard radiographs using a 12-point scale from 0/– (normal) to 3/+ (greatest), and the presence and severity of large pneumoconiotic opacities (i.e., progressive massive fibrosis [PMF]) as stage A (least severe PMF), B, or C (most severe PMF).

§ Coalescence of small opacities (4).

¶ Ratio of forced expiratory volume in 1 sec (FEV₁)/forced vital capacity (FVC) is less than the lower limit of normal (LLN), and FVC is greater than or equal to LLN. Obstruction typically results from airway diseases such as asthma, chronic obstructive lung disease, or emphysema.

** FEV₁/FVC is greater than LLNs, and FVC is less than LLN. Restriction typically results from scarring and inflammatory diseases of the lung tissue, such as pulmonary fibrosis or CWP.

FIGURE. Mean concentrations of respirable coal mine dust and crystalline silica in coal mine dust* for underground workers at the coal face† — Lee and Wise counties, Virginia, 1970–2005



* Data from Mine Safety and Health Administration (MSHA) coal mine inspector and mine operator samples.

† The cutting surface where coal is sheared from the wall and dust levels typically are greatest.

§ M = number of mines sampled; N = number of samples taken.

¶ MSHA permissible exposure limit for coal mine dust with <5% silica content.

** National Institute for Occupational Safety and Health recommended exposure limit for crystalline silica in coal mine dust.

silica content). This number of cases amounts to half the actual number of 11 advanced cases identified in this study, which is similar, as defined by the model, to the 11.9 cases that would be expected had the miners been exposed to an average dust concentration of 4 mg/m^3 .

Several reasons might explain the continued occurrence of advanced cases of CWP among miners. The current federal underground coal mine respirable dust limit of 2 mg/m^3 might be too high. In 1995, NIOSH concluded that the current limit would not eliminate advanced disease and established a recommended exposure limit (REL) of 1 mg/m^3 (6). In addition, although reported average coal mine dust levels during 1970–2005 were lower than the current 2 mg/m^3 standard (Figure), and only approximately 2.5% of individual samples exceeded this value, previous studies have indicated that compliance measurements might be subject to systematic bias and underestimate actual exposures (7,8). Exposures to silica dust during coal mining also might contribute to acquiring advanced pneumoconiosis (9). Only since 2001 have mean levels of silica in coal mine dust for underground miners in Lee and Wise counties been reported as low as the NIOSH REL of 0.05 mg/m^3 (Figure). During 1982–2000, approxi-

mately 65% of the silica air samples collected by MSHA inspectors in these counties exceeded the NIOSH REL.† Finally, the severity of disease might have been increased in part because of the toxicity of the coal being mined. NIOSH acknowledges that the risk for disease can vary with type of coal (6); however, the types of coal found in the two Virginia counties have not been previously associated with increased toxicity.

The findings in this report are subject to at least two limitations. First, participation was limited to 31% because of the time and resource constraints of the survey staff and other factors (e.g., equipment problems and a snowstorm). Second, migration between counties and frequent job changes are common among miners. At the time of the survey, only three of the 11 miners had worked for their current mine for >5 years. However, although these factors might have led to misestimation of the actual prevalence of CWP and PMF in this region, the occurrence of advanced cases of CWP among current miners should be considered a sentinel health event and justifies a comprehensive assessment of current dust-control measures.

NIOSH will expand medical surveillance activities in southwestern Virginia and elsewhere and continue collaborations with MSHA to increase protection of coal miners. Detailed information regarding exposures, mining conditions, dust controls, and coal composition is needed to improve preventive measures. To assess the effectiveness of current prevention and enforcement strategies, NIOSH is reviewing dust-control plans and examining mining conditions (including airborne silica dust levels) in southwestern Virginia and other mining areas where rapidly progressive CWP has been identified. These activities will help NIOSH make appropriate recommendations to MSHA and other agencies and improve ongoing surveillance and intervention measures. Coal mine operators should strive to maintain the lowest possible dust levels, at least consistent with the current compliance limits for coal mine dust and silica and preferably below the NIOSH RELs.

Acknowledgments

This report was based, in part, on data collected and compiled by ECWHSP staff members.

† Data from MSHA coal mine inspector and mine operator samples.

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Distribution of Insecticide-Treated Bednets During a Polio Immunization Campaign — Niger, 2005

The West African country of Niger (2005 population: approximately 14 million) is among the poorest in the world. In 2005, malaria was reported in approximately 760,000 persons and caused 2,000 deaths; however, surveillance has been inadequate, and the true numbers likely were even higher (1). In 2004, the overall mortality rate in Niger among children aged <5 years was 259 per 1,000 live births (2). At least 8% of these deaths likely were caused by malaria, and the actual proportion might be as high as 50% (3). In addition, Niger was one of only 10 countries with poliomyelitis during the first 3 months of 2006, and the risk for polio importation from neighboring Nigeria is high. Routine polio vaccination coverage remains low in Niger; in 2003, coverage with 3 doses of oral poliovirus vaccine (OPV) was 54% (4,5). To reduce the prevalence of malaria and bolster polio eradication measures, Niger's Ministry of Health, with support from international partners,* launched a nationwide integrated health campaign

in 2005. In coordination with a supplemental immunization activity (SIA) distributing OPV, long-lasting insecticide-treated bednets (ITNs)[†] for malaria prevention were provided free of charge to mothers of children aged <5 years. In sub-Saharan Africa, ITNs have reduced all-cause mortality in children aged 1–59 months by 17% (6). This was the second such national campaign worldwide; the first was conducted in Togo in December 2004 (7). This report describes findings from a survey of Niger's integrated health campaign and highlights differences with the campaign in Togo.

Niger's campaign occurred in three phases. During November 12–17, 2005, in all eight regions of the country, OPV and vitamin A were distributed to children aged <5 years during a house-to-house SIA. At the same time, in a trial run, bednets were distributed to selected areas before the full-scale distribution began. The second phase of the campaign occurred during December 19–24, 2005, in seven of the eight regions of Niger. Using a house-to-house approach for optimal coverage, 3,850 Niger Red Cross volunteers and approximately 16,000 vaccinators and community health workers administered OPV to children aged <5 years. Field workers marked the thumbnails of mothers whose children had been vaccinated and provided the mothers with vouchers for a free bednet. Because of the long distances, sparsely distributed population, and bulkiness of bednet bundles, delivering them to individual households was not feasible; therefore, the nets were distributed to mothers at posts within approximately 5 km of each village. Mothers presented their vouchers and nail markings to redeem an ITN 1–5 days after their child's vaccination. The third phase of the campaign occurred during March 17–21, 2006, in the eighth region (Niamey), where eligible mothers redeemed ITN vouchers at fixed posts. At the same time, a "mop-up" campaign was conducted in the rest of the country to distribute bednets to mothers who had received vouchers but not a bednet in December. All phases of the campaign were advertised in several ways, including through national media, Niger Red Cross volunteers and local leaders, and health centers. During ITN distribution, field staff members and clinic health workers promoted bednet usage.

A cross-sectional household survey was performed 1 month after the December ITN distribution during January 23–February 17, 2006, a period of low malaria transmission during the dry season. The survey assessed delivery of services in the first seven regions (those in which the ITN distribution had occurred by the time of the survey). Using a stratified, two-stage cluster sample design, two districts were selected

*Including the World Health Organization, International Federation of Red Cross and Red Crescent Societies, Canadian Red Cross, and Rotary International.

[†] Unlike conventional ITNs, which have to be retreated periodically with insecticide, long-lasting ITNs are impregnated with insecticide intended to last the life of the net.

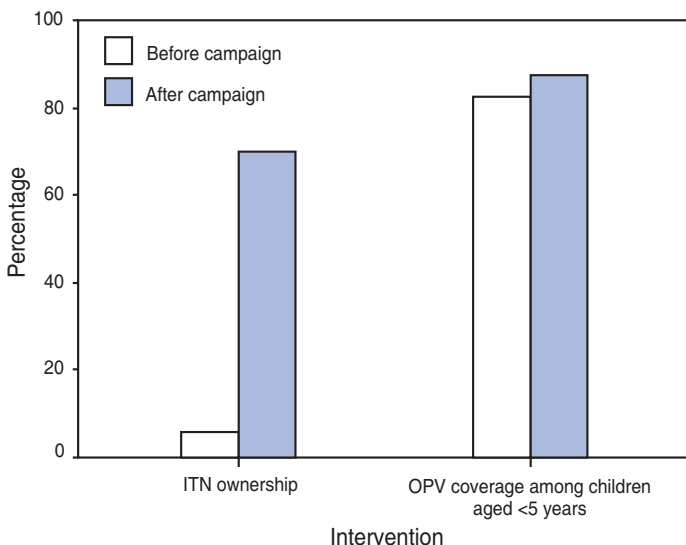
per region (with probability proportional to estimated population size) and eight enumeration areas per district; 16 households were randomly selected per enumeration area, plus nine additional households, for a total of 1,801 households.

Respondents in 88.7% of the 1,801 surveyed households reported that they had heard about the integrated campaign.[§] A total of 2,633 children aged <5 years were included in the survey. Respondents reported that 82.3% of the children had received ≥ 1 dose of OPV before (or independent of) the integrated campaign (Figure). During the campaign, 87.3% (95% confidence interval [CI] = 85.1%–89.5%) received OPV (range among regions: 81.8%–95.5%). In November, 83.8% (CI = 81.8%–85.8%) of children had received vitamin A. Before the campaign, 6.0% (CI = 4.1%–7.9%) of households with children aged <5 years owned an ITN. After the campaign, 69.9% (CI = 63.6%–76.3%) of households with children aged <5 years owned an ITN (range among regions: 58.2%–84.4%). An equity ratio also was calculated.[¶] For households with children aged <5 years, the equity ratio for household ITN ownership was 0.36 before the campaign and 0.83 afterward.

[§] Percentages were weighted based on probability of selection.

[¶] The ratio of intervention coverage proportions in the poorest quintile to the coverage in the wealthiest quintile of included households; thus, the closer the ratio was to 1, the greater the equity.

FIGURE. Insecticide-treated bednet (ITN) ownership* and oral poliovirus vaccine (OPV) coverage, before and after second phase[†] of campaign — Niger, 2005–2006



* In households with children aged <5 years.

[†] The second phase of the campaign took place December 19–24, 2005, and included seven of eight regions of Niger. OPV was provided to children aged <5 years, and ITN vouchers and thumbnail markings were provided to mothers of eligible children. A cross-sectional household survey was performed 1 month after the second phase, during January 23–February 17, 2006.

Of the 1,601 mothers with children aged <5 years, 69.3% reported receiving an ITN during the December phase. The most common reasons cited by the remaining 30.7% for not receiving an ITN were that no more bednets were available at the post (34.2%), campaign personnel never came to the village (9.3%), or the mother did not receive the nail marking needed to receive an ITN (7.1%). When asked about the voucher and nail-marking process, 20% of all eligible mothers said they did not receive nail markings, and 31.1% said that they did not receive vouchers. Of the 68.1% who received both nail markings and vouchers, 91.1% received a campaign bednet.

After the campaign, bednet usage was low; respondents in 20.3% of all households reported they had hung an ITN the preceding night. Of the children included in the survey, 15.4% (range among regions: 8.3%–38.5%) were reported to have slept under an ITN the preceding night. In households with an ITN, 21.8% of children slept under it the preceding night.

Reported by: I Ousmane, MD, S Issifi, Niger Ministry of Health; M Lama, MD, Regional Office for Africa, World Health Organization. J Roy, MD, S Hoyer, MD, J Haskeu, International Federation of Red Cross and Red Crescent Societies. J Vanden Eng, MS, W Hawley, PhD, A Wolkon, MPH, Div of Parasitic Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed); M Watkins, MPH, Global Immunization Div, National Center for Immunization and Respiratory Diseases (proposed); N Hochberg, MD, M Eliades, MD, EIS officers, CDC.

Editorial Note: The national ITN integrated health campaign in Togo and district-level campaigns in Ghana, Mozambique, Tanzania, and Zambia have demonstrated that integrating ITN distribution with an immunization activity can improve ITN ownership rapidly and equitably and help bring African nations closer to achieving the objectives of Roll Back Malaria** and United Nations Millennium Development Goals (8).^{††} Survey results indicate that the integrated campaign in Niger rapidly increased ITN ownership. Approximately 2 million ITNs, at a cost of \$4.16 per net, were distributed free of charge, with a resultant increased equity in ITN ownership among poorer and wealthier persons.

Although Niger's campaign reached 2 million persons, Togo's OPV coverage and ITN distribution among eligible children was higher: 93.7% (CI = 91.4%–96.1%) for OPV and 90.8% (CI = 88.1%–93.4%) for ITNs (7). Certain geographic and demographic differences might help explain the disparity. Niger is approximately 22 times the size of Togo, and 80% of the terrain is desert, which makes travel difficult (9). Furthermore, the widely dispersed, often migrant population of Niger

** The Roll Back Malaria Partnership, launched in 1998, aims to decrease malaria mortality by 50% by 2010 and by another 50% by 2015.

^{††} The goals include reducing by two thirds the mortality rate for children aged <5 years and decreasing the incidence of malaria and other major diseases.

is twice as large as that of Togo; because of food shortages, migration likely increased during the period before the campaign (9). Because of these factors, estimating initial ITN needs and resupplying fixed posts was difficult. These logistical factors might explain the reason some mothers did not receive ITNs even though their children had been vaccinated. In addition, culture and religion might have been a barrier; in some areas of Niger, women need permission from their husbands to leave the house.

Differences between the campaign protocols might also have contributed to increased coverage in Togo. In addition to providing OPV vaccination and ITNs, Togo's campaign included measles vaccination and mebendazole deworming treatment, which might have encouraged participation (Table). In Togo, ITNs were directly distributed to participants at the time of vaccination. Niger used a more complicated voucher and nail-marking system, possibly decreasing ITN distribution; 31.9% of eligible mothers did not receive vouchers, nail markings, or either. The Niger strategy involved marking thumbnails of all mothers (and vaccinating their children) and providing vouchers, which had to be retained and redeemed at a later date by the mothers. Such difficulties in the voucher strategy need to be weighed against the possible benefits; for example, providing vouchers for ITNs during vaccinations might encourage vaccination program participation.

Although the distribution campaign increased ITN ownership in households with children aged <5 years from 6% to nearly 70% by the end of the campaign, bednet usage was low. Low usage was not completely unexpected, because the survey was conducted during the dry season, which has few

mosquitoes and low, although ongoing, malaria transmission. Nonetheless, bednet usage was higher in Togo (43.5%) than in Niger (15.4%) during the dry season (7,8). Unlike in Togo, which has a dry season of approximately 4 months, Niger's dry season lasts approximately 8 months (October–May), and this survey was conducted midway through the dry season. A follow-up survey during the rainy season might indicate higher usage rates, as was the case in Togo (V. Takpa, Togo Ministry of Health, unpublished data, 2005). In addition, community outreach is advisable to encourage increased bednet usage before the rainy season (June–September).

Integrating free ITN distribution with an immunization campaign seems an effective way for Niger to increase ITN ownership rapidly without decreasing OPV coverage. Because of the similarities between the malaria and immunization programs in terms of target groups, field staff, and logistical requirements, coordination between these programs can minimize the costs and maximize the benefits of service delivery (10). The population of Niger is sparsely distributed and difficult to reach; therefore, a house-to-house approach was needed to ensure high OPV coverage. Field staff should consider whether OPV could be administered at posts in more densely populated areas or whether house-to-house bednet distribution (rather than at fixed posts) is feasible. Future investigations will focus on how such campaigns can increase bednet usage in addition to ownership. Although these concerns should be addressed, the successful integration of ITN distribution with an immunization campaign in Niger suggests that such national campaigns are feasible in other large African nations.

TABLE. Comparison of integrated health campaigns — Niger and Togo, 2004–2006

Characteristic	Niger	Togo
Date	First phase: November 12–17, 2005 Second phase: December 19–24, 2005 Third phase: March 17–21, 2006	December 13–19, 2004
Age of eligible children	<5 yrs	9–59 mos
Insecticide-treated bednet (ITN) recipient	Eligible mother (i.e., with at least one child aged <5 yrs)	Age-eligible child
Additional services provided	Oral poliovirus vaccine (OPV) and vitamin A distribution	OPV, measles vaccination, and mebendazole distribution
Location of service delivery	OPV and vitamin A at households; ITNs at fixed posts approximately 5 km from household	Fixed posts for all services
ITN vouchers and thumbnail marking*	Yes	No
Service coverage	OPV: 87.3%; ITNs: 69.3%; vitamin A: 83.8%	OPV: 93.7%; ITN: 90.8%; mebendazole: 92.7%; measles vaccine: 93.1%
% of children aged <5 yrs who used ITNs preceding night	15.4%	43.5%

*At the time of vaccination, field workers marked thumbnails of mothers whose children had been vaccinated and distributed vouchers for a free ITN.

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National Laboratory Inventory for Global Poliovirus Containment — European Region, June 2006

In May 1999, the World Health Assembly reaffirmed the commitment of the World Health Organization (WHO) to eradicate poliomyelitis and urged all member states to begin the process leading to the laboratory containment of wild poliovirus (WPV) (1). The WHO global action plan for laboratory containment of WPV begins with a survey of all biomedical facilities (Phase I). The purpose of the survey is to alert institutions and facilities to the need for containment, encourage reduction of WPV materials, and develop a national inventory of facilities holding such materials. The objective of Phase I is to provide a facility database for use in all subsequent steps toward global poliovirus containment. This report describes completion of Phase I containment by the European Region, the first of the six WHO regions to accomplish this goal.

In 1999, the European Regional Office (EURO) initiated the containment process with 1) a pilot inventory of WPV materials in the 37 national laboratories in the European Region Polio Laboratory Network and 2) collaborative pilot surveys in five countries (France, Germany, Netherlands, Russia, and the United Kingdom). In January 2000, the European Regional Commission for the Certification of the

Eradication of Poliomyelitis (RCC) approved the *Action Plan for Laboratory Containment of Wild Polioviruses in the WHO European Region* (2). As a result, in February 2000, EURO sent a letter to the ministries of health (MOHs) of the 52 member states announcing the containment initiative and asking each country to nominate a national task force on containment, a national containment coordinator, or both, and to prepare national plans of action. In addition, in May 2000, EURO distributed *Guidelines for Implementation of Laboratory Containment of Wild Polioviruses* (3), including sample letters, questionnaires, and inventory forms. During 2000–2005, EURO provided daily technical guidance, sponsored 46 consultant visits, and convened eight subregional containment workshops to assist countries during the Phase I process.

Strategies for generating the facility database differed among countries according to population size, administrative and health infrastructure, and economic development. To ensure the database included all facilities that might have infectious or potentially infectious WPV materials, facility lists were compiled from telephone directories, the Internet, purchased lists from vendors, professional organizations, advice from consultants, and data from MOHs. Facilities listed included hospitals, universities and other schools, water companies, private laboratories, private industries, vaccine producers, and nutrition research laboratories. Preexisting national lists of biomedical diagnostic laboratories were available in 43 countries where registration is required by law. Lists outside the health sector were compiled with the assistance of other government ministries responsible for environmental control, agriculture, natural resources, economic affairs, and defense. The use of multiple lists helped ensure that the database was comprehensive.

The most commonly used survey method consisted of two stages. In the first stage, all laboratories in the national database received a letter from the appropriate health authority 1) describing the containment initiative, 2) defining infectious* and potentially infectious† WPV materials, and 3) asking laboratories to complete an attached return form to declare whether such materials were present or had been destroyed. Facilities that failed to return the form within the prescribed period were recontacted by letters, telephone calls, or site visits. Facilities that reported WPV materials received a second letter reminding them of the importance of working with such materials under biosafety level 2 conditions as described in

* Clinical materials from confirmed WPV (including vaccine-derived poliovirus) infections, environmental sewage, or water samples in which such viruses are present, and replication products of such viruses (e.g., cell culture isolates, reference stocks, and laboratory derivatives) (1).

† Feces, respiratory secretions, environmental sewage, and untreated water samples of unknown origin or collected for any purpose at a time and in a geographic area where presence of WPVs (including vaccine-derived polioviruses) was suspected, and the products of such materials in poliovirus-permissive cells or animals (1).

the *WHO Global Action Plan for Laboratory Containment of Wild Polioviruses (1)* and requesting additional details on the nature and amount of materials for development of the national inventory. Facilities that failed to respond within the allotted time were recontacted.

Seventeen countries with highly centralized health systems excluded all basic clinical services laboratories because they did not have freezer storage capacity. The largest numbers of laboratories in this category were in Russia (29,336) and Kazakhstan (1,172). In other countries, all clinical service laboratories were excluded after the survey had determined that laboratories in this category lacked freezer storage capacity and did not retain clinical materials or products of materials. Private diagnostic laboratories in France were excluded because of existing regulations that required destruction of clinical samples after 1 week. The survey process in 45 countries was facilitated by MOH authority granted by existing health laws and regulations. Five countries amended regulations or developed new regulations to provide MOH authority to conduct the survey. France and Switzerland, both of which use inactivated poliovirus vaccine, included questions in their surveys regarding Sabin poliovirus materials in addition to WPV materials.

By March 2006, all 52 member states of the European Region had completed national surveys covering a total of 55,748 laboratories. Twenty-seven countries reported neither infectious nor potentially infectious WPV materials. Twenty-five countries reported a total of 265 laboratories in 164 institutions with infectious (116 laboratories) and potentially infectious (149) WPV materials. The majority of the laboratories retaining WPV materials were located in Western Europe, with the highest number of laboratories in the United Kingdom (103), followed by France (56), Germany (22), and Switzerland (13). Thirteen of the 25 countries with WPV materials reported one or two laboratories retaining WPV materials. Universities constituted the highest percentage of institutions retaining such materials, followed by public health institutions and hospitals. In 20 countries, one or more laboratories reported destroying all previously retained WPV materials during the course of the survey.

Each country submitted national documentation of survey and inventory quality to EURO in accordance with *WHO Guidelines for Documenting the Quality of Phase I Wild Poliovirus Laboratory Containment Activities (4)*. National documentation was assessed by two independent panels of laboratory professionals convened by EURO. The first panel assessed documentation for survey and inventory deficiencies and assessed the need for additional information. The second panel reviewed the revised submissions from each country and made recommendations to EURO and RCC to approve or to

request additional information before approval. In June 2006, RCC accepted the EURO containment report and declared Phase I complete.

Reported by: *World Health Organization Regional Office for Europe, Copenhagen, Denmark. Immunization, Vaccines, and Biologicals Dept, World Health Organization, Geneva, Switzerland. Global Immunization Div, National Center for Immunization and Respiratory Diseases (proposed), CDC.*

Editorial Note: The European Region is the first WHO region to have completed Phase I of the WHO plan for laboratory containment of WPVs. In the WHO Western Pacific Region, all but two countries (China and Japan) have completed Phase I. The WHO Americas Region aims to complete the survey and inventory by the end of 2006. In total, Phase I activities have been completed in 100 (74%) of the 135 countries in the three WHO regions certified as polio free (i.e., the Americas, European, and Western Pacific regions). In addition, all countries that did not report polio in 2005 in the WHO South East Asia and Eastern Mediterranean regions have reported completion of the survey and inventory. Containment activities in the African Region are primarily focused on countries in the southern and eastern parts of the continent, with seven countries reporting completion of Phase I. Poliovirus containment activities are now an integral component of polio eradication in countries of all six WHO regions. In all WHO regions to date, results of the facility survey and inventory indicate that countries appreciate the necessity for post-eradication poliovirus destruction and containment. The majority of countries have indicated their intention to destroy WPV materials once eradication has been achieved.

Since publication of the second edition of the *WHO Global Action Plan for Laboratory Containment of Wild Polioviruses* in 2004 (1), WHO has established the goal for all countries to stop routine use of oral poliovirus vaccine (OPV) when WPV circulation is interrupted (5). Achieving that goal depends largely on assurances from each country that sufficient safeguards exist to ensure that facility-associated risk for reintroduction of wild or OPV/Sabin polioviruses will not outweigh the benefits of OPV cessation.

The forthcoming third edition of the *WHO Global Action Plan to Minimize Poliovirus Facility-Associated Risk in the Post-Eradication/Post-OPV Era* (6) proposes to 1) minimize facility-associated poliovirus risk by destroying WPV and Sabin poliovirus strains in all facilities, except in <20 facilities worldwide that serve essential functions (e.g., vaccine production, quality control, reference, or research) and 2) meet all safeguards against transmission. In the third edition, the components of Phase I are unchanged, as are the objectives associated

with the facility database and inventory. Phase II, which will begin upon completion of the Phase I national surveys and inventories, will provide guidance to countries for establishing long-term national policies for post-eradication/post-OPV cessation and regulations to enforce these policies.

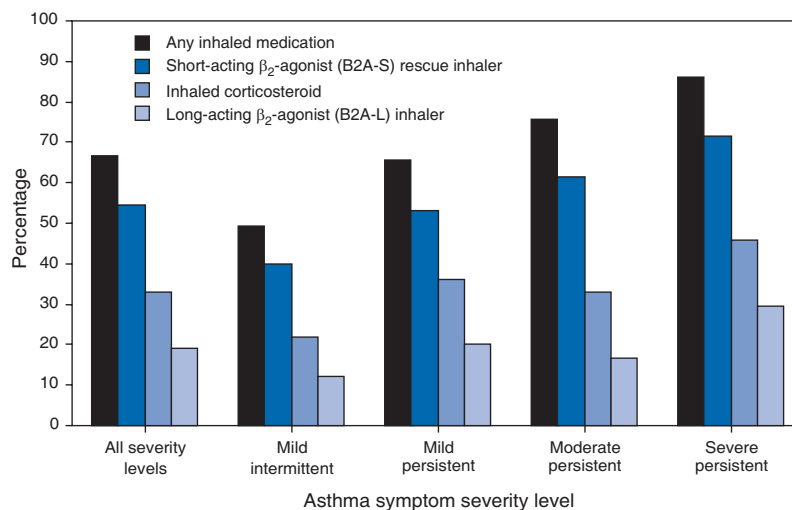
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QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Persons With Current Asthma* Who Used Inhaled Medication During the Preceding 3 Months, by Medication Type and Symptom Severity Level† — United States, 2003



* Persons with current asthma were respondents who reported ever being told by a medical professional that they had asthma and who still had asthma.

† The frequency of symptoms and degree of activity limitation were used to classify those with current asthma into four symptom severity groups. Levels are defined by the National Asthma Education and Prevention Program in *Guidelines for the Diagnosis and Management of Asthma* (available at <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>).

In 2003, approximately two thirds of persons with current asthma used one or more inhaled medications during the preceding 3 months, and the proportion using inhaled medications increased with levels of symptom severity. Approximately half of all respondents with asthma used a B2A-S rescue inhaler, one third used an inhaled corticosteroid, and one fifth used a B2A-L inhaler. Each symptom severity level had a similar pattern of inhaled medication use.

SOURCE: 2003 National Asthma Survey. Available at <http://www.cdc.gov/nchs/about/major/slairs/nas.htm>.

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending August 19, 2006 (33rd Week)*

Disease	Current week	Cum 2006	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2005	2004	2003	2002	2001	
Anthrax	—	1	—	—	—	—	2	23	
Botulism:									
foodborne	—	3	1	19	16	20	28	39	
infant	—	51	2	90	87	76	69	97	
other (wound & unspecified)	—	37	1	33	30	33	21	19	
Brucellosis	4	64	3	122	114	104	125	136	GA (1), FL (1), CA (2)
Chancroid	—	21	0	17	30	54	67	38	
Cholera	—	4	0	8	5	2	2	3	
Cyclosporiasis§	2	75	5	734	171	75	156	147	GA (2)
Diphtheria	—	—	0	—	—	1	1	2	
Domestic arboviral diseases§§¶:									
California serogroup	—	5	7	78	112	108	164	128	
eastern equine	—	1	1	21	6	14	10	9	
Powassan	—	—	0	1	1	—	1	N	
St. Louis	—	2	4	10	12	41	28	79	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis§:									
human granulocytic	9	195	16	790	537	362	511	261	NY (9)
human monocytic	13	212	11	522	338	321	216	142	NY (3), MO (1), MD (1), NC (3), AR (5)
human (other & unspecified)	2	50	2	122	59	44	23	6	NC (1), TN (1)
<i>Haemophilus influenzae</i> **,									
invasive disease (age <5 yrs):									
serotype b	—	4	0	9	19	32	34	—	
nonserotype b	—	55	3	135	135	117	144	—	
unknown serotype	5	129	3	217	177	227	153	—	OH (1), FL (1), AZ (2), CA (1)
Hansen disease§	2	39	1	88	105	95	96	79	FL (1), CA (1)
Hantavirus pulmonary syndrome§	—	21	0	29	24	26	19	8	
Hemolytic uremic syndrome, postdiarrheal§	2	105	6	221	200	178	216	202	VT (1), WA (1)
Hepatitis C viral, acute	6	493	35	771	713	1,102	1,835	3,976	NY (1), MD (1), VA (1), NC (1), FL (1), WA (1)
HIV infection, pediatric (age <13 yrs)§,††	—	52	4	380	436	504	420	543	
Influenza-associated pediatric mortality§,§§,¶¶	—	41	0	49	—	N	N	N	
Listeria	14	354	20	892	753	696	665	613	ME (1), NY (2), PA (1), OH (2), IN (1), MI (1), MD (1), VA (1), NC (1), TN (1), CA (2)
Measles	1***	29	1	66	37	56	44	116	MO (1)
Meningococcal disease,††† invasive:									
A, C, Y, & W-135	1	142	4	297	—	—	—	—	WA (1)
serogroup B	2	96	1	157	—	—	—	—	VA (1), WA (1)
other serogroup	—	13	0	27	—	—	—	—	
Mumps	12	5,490	6	314	258	231	270	266	KS (8), FL (1), UT (1), CA (2)
Plague	—	5	0	8	3	1	2	2	
Poliomyelitis, paralytic	—	—	—	1	—	—	—	—	
Psittacosis§	—	12	0	19	12	12	18	25	
Q fever§	2	88	1	139	70	71	61	26	MO (2)
Rabies, human	—	1	0	2	7	2	3	1	
Rubella	—	5	0	11	10	7	18	23	
Rubella, congenital syndrome	—	1	—	1	—	1	1	3	
SARS-CoV§,§§	—	—	—	—	—	8	N	N	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	1	71	1	129	132	161	118	77	MT (1)
<i>Streptococcus pneumoniae</i> §									
invasive disease (age <5 yrs)	11	704	7	1,257	1,162	845	513	498	IN (10), WV (1)
Syphilis, congenital (age <1 yr)	6	164	7	361	353	413	412	441	NY (1), MI (5)
Tetanus	—	15	1	27	34	20	25	37	
Toxic-shock syndrome (other than streptococcal)§	1	58	2	96	95	133	109	127	PA (1)
Trichinellosis	—	9	0	19	5	6	14	22	
Tularemia§	3	50	4	154	134	129	90	129	MO (1), KS (1), CA (1)
Typhoid fever	6	161	9	324	322	356	321	368	VA (1), NC (1), AZ (1), CA (3)
Vancomycin-intermediate <i>Staphylococcus aureus</i> §	—	2	—	2	—	N	N	N	
Vancomycin-resistant <i>Staphylococcus aureus</i> §	—	—	—	3	1	N	N	N	
Yellow fever	—	—	—	—	—	—	1	—	

—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.

* Incidence data for reporting years 2005 and 2006 are provisional, whereas data for 2001, 2002, 2003, and 2004 are finalized.

† Calculated by summing the incidence counts for the current week, the two weeks preceding the current week, and the two weeks following the current week, for a total of 5 preceding years. Additional information is available at <http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf>.

§ Not notifiable in all states.

¶ Includes both neuroinvasive and non-neuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed) (ArboNET Surveillance).

** Data for *H. influenzae* (all ages, all serotypes) are available in Table II.

†† Updated monthly from reports to the Division of HIV/AIDS Prevention, National Center for HIV, Viral Hepatitis, STDs, and Tuberculosis Prevention (proposed). Implementation of HIV reporting influences the number of cases reported. Data for HIV/AIDS are available in Table IV quarterly.

§§ Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed).

¶¶ A total of 46 cases were reported since the beginning of the 2005-06 flu season (October 2, 2005 [week 40]).

*** One measles case was reported from another country for the current week.

††† Data for meningococcal disease (all serogroups and unknown serogroups) are available in Table II.

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending August 19, 2006, and August 20, 2005 (33rd Week)*

Reporting area	Lyme disease					Malaria				
	Current week	Previous 52 weeks		Cum 2006	Cum 2005	Current week	Previous 52 weeks		Cum 2006	Cum 2005
		Med	Max				Med	Max		
United States	461	248	2,153	9,087	14,030	19	24	125	733	875
New England	124	37	780	1,532	2,533	1	1	12	40	46
Connecticut	121	8	753	1,219	346	—	0	10	10	10
Maine†	—	2	13	56	185	—	0	1	3	4
Massachusetts	—	2	98	33	1,833	1	0	3	18	25
New Hampshire	—	5	32	187	121	—	0	3	8	4
Rhode Island	—	0	12	—	25	—	0	8	—	2
Vermont†	3	1	7	37	23	—	0	1	1	1
Mid. Atlantic	287	151	1,176	5,368	8,162	—	4	13	117	237
New Jersey	—	24	123	1,101	2,811	—	1	3	28	61
New York (Upstate)	252	76	1,150	2,355	2,037	—	1	11	20	29
New York City	—	1	18	10	275	—	2	8	47	122
Pennsylvania	35	40	193	1,902	3,039	—	1	3	22	25
E.N. Central	2	12	62	607	1,406	1	2	7	69	99
Illinois	—	0	6	—	110	—	1	5	23	54
Indiana	—	0	3	11	23	—	0	3	7	3
Michigan	2	1	7	29	30	1	0	2	13	17
Ohio	—	1	5	26	35	—	0	3	19	15
Wisconsin	—	10	61	541	1,208	—	0	3	7	10
W.N. Central	6	10	98	295	314	—	0	32	30	32
Iowa	—	1	7	45	72	—	0	1	1	5
Kansas	—	0	2	3	3	—	0	2	5	4
Minnesota	6	6	96	231	228	—	0	30	14	11
Missouri	—	0	3	8	9	—	0	2	5	12
Nebraska†	—	0	2	7	—	—	0	2	3	—
North Dakota	—	0	3	—	—	—	0	1	1	—
South Dakota	—	0	1	1	2	—	0	1	1	—
S. Atlantic	32	30	124	1,050	1,466	8	7	15	217	193
Delaware	—	8	26	317	486	—	0	1	5	3
District of Columbia	3	0	7	27	7	—	0	2	3	6
Florida	2	1	5	27	17	2	1	6	39	33
Georgia	—	0	1	1	5	3	1	6	58	38
Maryland†	15	16	87	506	777	1	1	5	48	69
North Carolina	1	0	5	19	35	1	0	8	17	21
South Carolina†	—	0	3	7	9	—	0	2	7	5
Virginia†	11	3	25	141	123	1	1	9	38	17
West Virginia	—	0	44	5	7	—	0	2	2	1
E.S. Central	—	0	4	7	19	2	0	3	19	19
Alabama†	—	0	1	3	—	—	0	2	8	4
Kentucky	—	0	2	1	3	—	0	2	3	5
Mississippi	—	0	0	—	—	—	0	1	3	—
Tennessee†	—	0	4	3	16	2	0	1	5	10
W. S. Central	—	0	5	8	60	—	2	31	48	70
Arkansas	—	0	1	—	4	—	0	2	1	5
Louisiana	—	0	0	—	3	—	0	1	—	2
Oklahoma	—	0	0	—	—	—	0	6	6	3
Texas†	—	0	5	8	53	—	1	29	41	60
Mountain	—	0	4	12	13	2	1	9	37	36
Arizona	—	0	4	3	2	—	0	9	14	6
Colorado	—	0	1	2	—	—	0	2	9	20
Idaho†	—	0	1	1	1	—	0	0	—	—
Montana	—	0	0	—	—	—	0	1	1	—
Nevada†	—	0	1	1	3	—	0	1	1	2
New Mexico†	—	0	1	—	2	—	0	1	1	3
Utah	—	0	1	5	2	2	0	2	11	4
Wyoming	—	0	0	—	3	—	0	1	—	1
Pacific	10	4	22	208	57	5	4	13	156	143
Alaska	—	0	1	2	4	—	0	4	20	3
California	10	4	21	197	33	5	3	10	107	107
Hawaii	N	0	0	N	N	—	0	2	4	13
Oregon†	—	0	2	6	16	—	0	2	7	7
Washington	—	0	3	3	4	—	0	5	18	13
American Samoa	U	0	0	U	U	U	0	0	U	U
C.N.M.I.	U	0	0	U	U	U	0	0	U	U
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	—	3
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.

U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

* Incidence data for reporting years 2005 and 2006 are provisional.

† Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending August 19, 2006, and August 20, 2005 (33rd Week)*

Table with columns for Reporting area, Disease (Streptococcus pneumoniae, Syphilis, Varicella), and counts for Current week, Previous 52 weeks (Med, Max), and Cumulative counts for 2006 and 2005. Includes sub-sections for United States, New England, Mid. Atlantic, E.N. Central, W.N. Central, S. Atlantic, E.S. Central, W.S. Central, Mountain, and Pacific.

C.N.M.I.: Commonwealth of Northern Mariana Islands. U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum. * Incidence data for reporting years 2005 and 2006 are provisional. † Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending August 19, 2006, and August 20, 2005 (33rd Week)*

Reporting area	West Nile virus disease [†]									
	Neuroinvasive					Non-neuroinvasive				
	Current week	Previous 52 weeks		Cum 2006	Cum 2005	Current week	Previous 52 weeks		Cum 2006	Cum 2005
		Med	Max				Med	Max		
United States	4	1	155	236	617	1	0	203	332	926
New England	—	0	3	—	1	—	0	2	1	—
Connecticut	—	0	2	—	1	—	0	1	1	—
Maine [§]	—	0	0	—	—	—	0	0	—	—
Massachusetts	—	0	3	—	—	—	0	1	—	—
New Hampshire	—	0	0	—	—	—	0	0	—	—
Rhode Island	—	0	1	—	—	—	0	0	—	—
Vermont [§]	—	0	0	—	—	—	0	0	—	—
Mid. Atlantic	—	0	10	5	10	—	0	4	1	10
New Jersey	—	0	1	—	—	—	0	2	—	—
New York (Upstate)	—	0	7	—	1	—	0	2	—	1
New York City	—	0	2	1	1	—	0	1	—	3
Pennsylvania	—	0	3	4	8	—	0	2	1	6
E.N. Central	—	0	39	7	98	—	0	18	2	52
Illinois	—	0	25	5	66	—	0	16	1	45
Indiana	—	0	2	1	3	—	0	1	—	—
Michigan	—	0	14	1	8	—	0	3	—	2
Ohio	—	0	9	—	18	—	0	4	—	4
Wisconsin	—	0	3	—	3	—	0	2	1	1
W.N. Central	1	0	26	43	88	—	0	58	76	268
Iowa	—	0	3	3	3	—	0	4	4	8
Kansas	—	0	3	—	3	—	0	1	1	N
Minnesota	—	0	5	14	8	—	0	6	13	14
Missouri	—	0	4	5	8	—	0	3	1	5
Nebraska [§]	—	0	8	4	27	—	0	20	4	66
North Dakota	—	0	4	1	10	—	0	15	23	45
South Dakota	1	0	7	16	29	—	0	22	30	130
S. Atlantic	—	0	6	—	11	—	0	3	—	15
Delaware	—	0	1	—	1	—	0	0	—	—
District of Columbia	—	0	1	—	—	—	0	1	—	—
Florida	—	0	2	—	7	—	0	1	—	11
Georgia	—	0	3	—	—	—	0	3	—	2
Maryland [§]	—	0	2	—	1	—	0	1	—	1
North Carolina	—	0	1	—	1	—	0	1	—	1
South Carolina [§]	—	0	1	—	1	—	0	0	—	—
Virginia [§]	—	0	0	—	—	—	0	1	—	—
West Virginia	—	0	0	—	—	N	0	0	N	N
E.S. Central	—	0	10	24	19	—	0	5	7	12
Alabama [§]	—	0	1	—	2	—	0	2	—	1
Kentucky	—	0	1	—	1	—	0	0	—	—
Mississippi	—	0	9	24	11	—	0	5	7	10
Tennessee [§]	—	0	3	—	5	—	0	1	—	1
W.S. Central	—	0	25	78	129	—	0	22	15	83
Arkansas	—	0	3	4	6	—	0	2	—	8
Louisiana	—	0	9	11	67	—	0	7	6	35
Oklahoma	—	0	6	4	3	—	0	3	—	1
Texas [§]	—	0	16	59	53	—	0	13	9	39
Mountain	2	0	21	64	51	1	0	57	180	111
Arizona	—	0	8	2	13	—	0	8	2	17
Colorado	—	0	5	10	5	—	0	14	31	51
Idaho [§]	—	0	5	13	2	—	0	36	102	4
Montana	—	0	3	1	6	—	0	9	1	11
Nevada [§]	2	0	8	21	5	1	0	8	30	12
New Mexico [§]	—	0	3	—	11	—	0	4	—	6
Utah	—	0	6	16	8	—	0	8	11	7
Wyoming	—	0	2	1	1	—	0	2	3	3
Pacific	1	0	38	15	210	—	0	60	50	375
Alaska	—	0	0	—	—	—	0	0	—	—
California	—	0	38	14	210	—	0	60	44	371
Hawaii	—	0	0	—	—	—	0	0	—	—
Oregon [§]	1	0	1	1	—	—	0	2	6	4
Washington	—	0	0	—	—	—	0	0	—	—
American Samoa	U	0	0	U	U	U	0	0	U	U
C.N.M.I.	U	0	0	U	U	U	0	0	U	U
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	0	—	—	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.

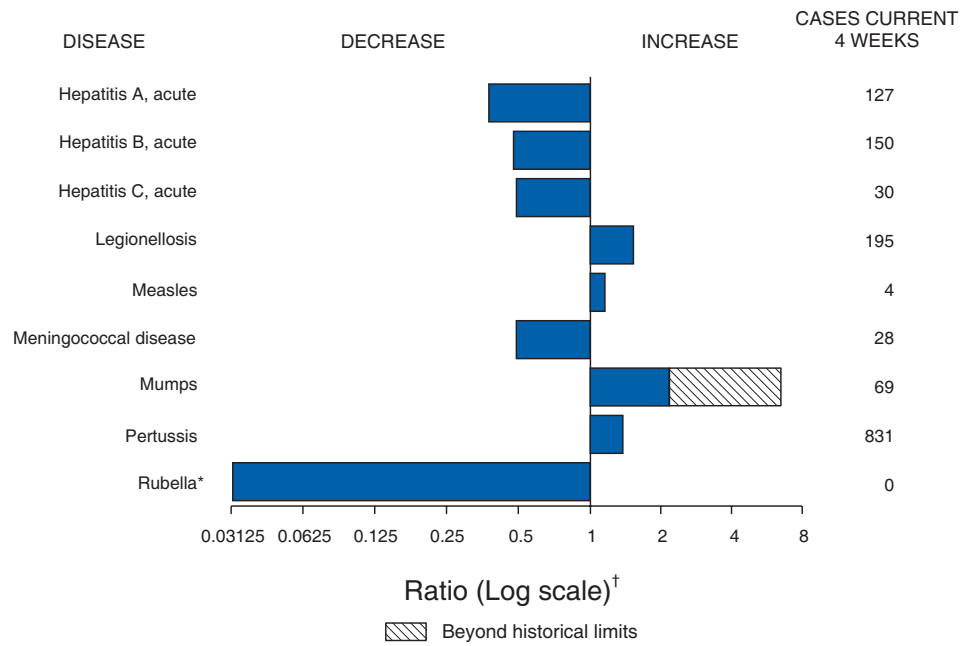
U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

* Incidence data for reporting years 2005 and 2006 are provisional.

† Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed) (ArboNET Surveillance).

§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals August 19, 2006, with historical data



* No rubella cases were reported for the current 4-week period yielding a ratio for week 33 of zero (0).
 † Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

Notifiable Disease Morbidity and 122 Cities Mortality Data Team
 Patsy A. Hall
 Deborah A. Adams Rosaline Dhara
 Willie J. Anderson Vernitta Love
 Lenee Blanton Pearl C. Sharp

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