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National Latino AIDS Awareness Day — October 15, 2012

National Latino AIDS Awareness Day is observed each year to increase awareness of the disproportionate impact of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) on the Hispanic or Latino population in the United States. In 2009, the estimated percentage of persons in the United States with HIV infection who did not know they were infected was 19.7% among Hispanics or Latinos, compared with 14.8% among non-Hispanic whites (*1*). National Latino AIDS Awareness Day, October 15, 2012, is an opportunity to encourage increased HIV prevention activities, such as HIV testing and linkage to care and treatment, for Hispanics or Latinos.

Two of the goals of the National HIV/AIDS Strategy are to reduce HIV incidence and to reduce HIV-related disparities (*2*). For 2009, estimates of HIV incidence indicated that Hispanics or Latinos had a rate of 26.4 per 100,000 population, compared with 9.1 for non-Hispanic whites (*3*).

CDC supports testing, access to care and treatment, and a range of other efforts to reduce HIV infection among Hispanics or Latinos. Additional information about CDC activities for National Latino AIDS Awareness Day and HIV resources is available at http://www.cdc.gov/hiv/latinos/index.htm.

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Geographic Differences in HIV Infection Among Hispanics or Latinos — 46 States and Puerto Rico, 2010

In the United States, Hispanics or Latinos are disproportionately affected by infection with human immunodeficiency virus (HIV). In 2010, new diagnoses of HIV infection among Hispanics or Latinos occurred at an annual rate that was 2.8 times that of non-Hispanic whites (20.4 versus 7.3 per 100,000 persons) (*1*). To further assess HIV infection among Hispanics or Latinos in the United States, CDC analyzed the geographic distribution of new diagnoses in 2010 in 46 states and Puerto Rico and the characteristics of those diagnosed. The results of this analysis determined that a lower percentage of infections were attributed to male-to-male sexual contact in Puerto Rico than in the 46 states (36.1% versus 66.5%) and a higher percentage were attributed to heterosexual contact (40.7% versus 22.0%) or injection-drug use (IDU) (20.4% versus 8.6%). In the 46 states, the rate of new diagnoses of HIV infection among Hispanics or Latinos in the Northeast Census region in 2010 (55.0 per 100,000 persons) was more

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than twice as high as in other regions, and a higher percentage of those with a new HIV diagnosis were born in Puerto Rico or had their HIV infection attributed to IDU, compared with other regions. Geographic differences in HIV infection among Hispanics or Latinos should be addressed with HIV testing, prevention, and treatment efforts tailored to specific communities.

Data were analyzed for Hispanics or Latinos* with newly diagnosed HIV infection in 2010 who were aged ≥13 years at HIV diagnosis and for those living with a diagnosis of HIV infection who were aged ≥13 years at the end of 2009. The data were reported to CDC through June 2011 by Puerto Rico, which represented 98.1% of Hispanics or Latinos diagnosed with HIV infection in five U.S. dependent areas† in 2010, and the 46 states. All of these reporting areas have had confidential, name-based HIV infection reporting since at least January 2007. The numbers and percentages of HIV diagnoses in 2010 among Hispanic or Latino adolescents and adults in each U.S. Census region§ and Puerto Rico were calculated by sex, age group, transmission category, residence at diagnosis, and place of birth. The number of diagnoses of HIV infection was adjusted for reporting delay but not for incomplete reporting. Multiple imputation was used to assign a transmission category to those cases missing risk information (*2*,*3*). The number of persons living with a diagnosis of HIV infection (prevalence of diagnosed HIV infection) was further adjusted to account for the delay in reporting of deaths among persons with HIV. Where possible, rates per 100,000 persons were calculated based on postcensal estimates of Hispanic populations from the U.S. Census Bureau (*4*).

New Diagnoses of HIV Infection

In 2010, an estimated total of 10,731 Hispanics or Latinos were newly diagnosed with HIV infection in 46 states (9,620 [89.6%]) and Puerto Rico (1,111 [10.4%]) (Table 1). By category, 83.2% were males, 63.4% were men who had sex with men, and 86.4% were urban residents; infection was most common (32.4%) among persons aged 25–34 years. Among the 8,966 (83.6%) cases with birthplace data available, 54.4% of new diagnoses were in persons born outside of the 50 states and the District of Columbia; the highest percentages were from Mexico (19.4%) and Puerto Rico (15.8%). Compared with new diagnoses of HIV infection among Hispanics or Latinos in the 46 states, lower percentages of diagnoses in Hispanics or Latinos in Puerto Rico were among males (75.3% versus 84.1%), men who had sex with men (36.1% versus 66.5%), and urban residents¶ (69.8% versus 88.3%); higher percentages were among

* Hispanics or Latinos might be of any race.

† The five U.S. dependent areas are American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.

§ *Northeast*: Connecticut, Maine, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island; *Midwest*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South*: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *West*: Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

¶ Residents of metropolitan areas with ≥500,000 population.

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TABLE 1. Estimated number* and percentage of new diagnoses of HIV infection among Hispanics or Latinos† aged ≥13 years, by U.S. Census region§ and selected characteristics — 46 states and Puerto Rico, 2010

Characteristic	Northeast		Midwest		South		West		Subtotal		Puerto Rico		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sex														
Male	1,943	76.7	501	84.2	2,858	84.0	2,785	90.2	8,087	84.1	837	75.3	**8,924**	**83.2**
Female	591	23.3	95	16.0	546	16.0	302	9.8	1,534	15.9	274	24.7	**1,807**	**16.8**
Age group at diagnosis (yrs)														
13–24	457	18.0	118	19.8	628	18.4	576	18.7	1,779	18.5	136	12.2	**1,916**	**17.9**
25–34	748	29.5	219	36.8	1,104	32.4	1,113	36.1	3,184	33.1	298	26.8	**3,482**	**32.4**
35–44	680	26.8	165	27.7	904	26.6	798	25.9	2,547	26.5	283	25.5	**2,831**	**26.4**
45–54	422	16.7	62	10.4	555	16.3	429	13.9	1,468	15.3	250	22.5	**1,718**	**16.0**
≥55	226	8.9	31	5.2	213	6.3	170	5.5	640	6.7	144	13.0	**785**	**7.3**
Transmission category														
Males														
Male-to-male sexual contact	1,331	52.5	397	66.7	2,297	67.5	2,374	76.9	6,399	66.5	401	36.1	**6,800**	**63.4**
Injection-drug use	305	12.0	39	6.6	144	4.2	144	4.7	632	6.6	200	18.0	**833**	**7.8**
Male-to-male sexual contact and injection-drug use	55	2.2	16	2.7	82	2.4	126	4.1	279	2.9	31	2.8	**310**	**2.9**
Heterosexual contact¶	251	9.9	48	8.1	333	9.8	139	4.5	771	8.0	205	18.5	**975**	**9.1**
Other**	1	0.0	1	0.2	2	0.1	2	0.1	6	0.1	—	—	**5**	**0.0**
Females														
Injection-drug use	96	3.8	13	2.2	50	1.5	32	1.0	191	2.0	27	2.4	**217**	**2.0**
Heterosexual contact¶	495	19.5	82	13.8	496	14.6	270	8.7	1,343	14.0	247	22.2	**1,588**	**14.8**
Other**	1	0.0	0	0.0	1	0.0	1	0.0	3	0.0	—	—	**2**	**0.0**
Residence area at diagnosis														
Urban††	2,362	93.2	473	79.5	2,831	83.2	2,829	91.6	8,495	88.3	775	69.8	**9,270**	**86.4**
Suburban§§	115	4.5	60	10.1	340	10.0	204	6.6	719	7.5	233	21.0	**952**	**8.9**
Rural¶¶	33	1.3	33	5.5	205	6.0	46	1.5	317	3.3	29	2.6	**346**	**3.2**
Unknown	25	1.0	29	4.9	28	0.8	8	0.3	90	0.9	74	6.7	**164**	**1.5**
Place of birth														
50 states and DC	1,178	55.7	178	44.1	1,407	50.5	1,296	50.3	4,059	51.5	32	2.9	**4,090**	**45.6**
Central America	140	6.6	41	10.1	295	10.6	230	8.9	706	9.0	3	0.3	**709**	**7.9**
Cuba	28	1.3	2	0.5	200	7.2	17	0.7	247	3.1	—	—	**247**	**2.8**
Mexico	153	7.2	136	33.7	517	18.6	932	36.2	1,738	22.1	2	0.2	**1,740**	**19.4**
Puerto Rico	224	10.6	21	5.2	145	5.2	16	0.6	406	5.2	1,009	90.8	**1,416**	**15.8**
South America	163	7.7	17	4.2	157	5.6	52	2.0	389	4.9	6	0.5	**395**	**4.4**
Other	229	10.8	9	2.2	65	2.3	33	1.3	336	4.3	34	3.1	**369**	**4.1**
Overall* **	**2,534**	**100.0**	**595**	**100.0**	**3,404**	**100.0**	**3,087**	**100.0**	**9,620**	**100.0**	**1,111**	**100.0**	**10,731**	**100.0**

* Estimates resulted from statistical adjustment that accounted for reporting delays and missing risk-factor information, but not for incomplete reporting.
† Hispanics or Latinos might be of any race.
§ *Northeast:* Connecticut, Maine, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island; *Midwest:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South:* Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *West:* Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.
¶ Heterosexual contact with a person known to have, or to be at high risk for HIV infection.
** Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.
†† Metropolitan area of ≥500,000 population.
§§ Metropolitan area of 50,000–499,999 population.
¶¶ Nonmetropolitan area of <50,000 population.
*** Because column totals for estimated numbers were calculated independently of the values for the subpopulations, the values in each column might not sum to the column total.

those aged ≥45 years (35.5% versus 22.0%) or with a diagnosis attributed to heterosexual contact (40.7% versus 22.0%) or IDU (20.4% versus 8.6%).

Among the 46 states, a higher percentage of Hispanics or Latinos with new diagnoses resided in the South (35.4%), followed by the West (32.1%), Northeast (26.3%), and Midwest (6.2%). Characteristics of Hispanics or Latinos with a new diagnosis of HIV infection in 2010 differed regionally. Compared with other regions, the Northeast had the lowest percentage of diagnoses in males (76.7%) and in rural residents** (1.3%), whereas the South had the highest percentage in rural residents (6.0%). Although male-to-male sexual contact was the predominant transmission category for HIV infection overall (66.5%), a lower percentage of HIV infections were attributed to male-to-male sexual contact in the Northeast (52.5%). More infections were attributed to IDU in the Northeast than elsewhere (15.8% versus <8.8% in the other regions). In 2010, 48.7%

** Residents of nonmetropolitan areas with <50,000 population.

of the Hispanics or Latinos in the 46 states with a diagnosis of HIV infection attributed to IDU lived in the Northeast. Among Hispanics or Latinos with new diagnoses of HIV infection who were born outside of the 50 states and the District of Columbia, Puerto Rico was the most common birthplace in the Northeast (10.6%) and Mexico in all other regions (>18.6%).

In 2010, the overall rate of new diagnoses of HIV infection among Hispanics or Latinos in 46 states was 27.6 per 100,000 persons. The rate in the Northeast (55.0) was more than twice that of any other region (Table 2).

Prevalence Rate of Diagnosed HIV Infection

At the end of 2009, the overall prevalence rate of diagnosed HIV infection among Hispanics or Latinos was 432.3 per 100,000 persons. The prevalence rate of diagnosed HIV infection in the Northeast (1,252.6) was 3.8 times that in the South, the region with the next highest rate (333.7). Four of the five states with the highest prevalence rates of diagnosed HIV infection per 100,000 Hispanics or Latinos at the end of 2009 were in the Northeast (Figure).

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Editorial Note

The burden of HIV infection among Hispanics or Latinos differs between the 46 states and Puerto Rico. In 2010, Hispanics or Latinos with new diagnoses of HIV infection in Puerto Rico were more likely to have HIV infection attributed to IDU or heterosexual contact and were older than those with new diagnoses in the 46 states. Within the 46 states, the Northeast region accounted for an estimated 13.9% of the Hispanic or

TABLE 2. Estimated* rate† of new diagnoses of HIV infection in 2010 and prevalence rate of diagnosed HIV infection at the end of 2009, among Hispanics or Latinos§ aged ≥13 years, by U.S. Census region¶ — 46 states

	Northeast		Midwest		South		West		Total	
Characteristic	Rate of new diagnoses of HIV infection in 2010	Prevalence rate of diagnosed HIV infection at the end of 2009	Rate of new diagnoses of HIV infection in 2010	Prevalence rate of diagnosed HIV infection at the end of 2009	Rate of new diagnoses of HIV infection in 2010	Prevalence rate of diagnosed HIV infection at the end of 2009	Rate of new diagnoses of HIV infection in 2010	Prevalence rate of diagnosed HIV infection at the end of 2009	Rate of new diagnoses of HIV infection in 2010	Prevalence rate of diagnosed HIV infection at the end of 2009
Sex										
Male	83.9	1,744.3	30.1	443.2	44.2	514.3	36.3	482.6	**44.7**	**651.6**
Female	25.8	755.6	6.6	120.7	9.3	135.4	4.2	78.6	**9.2**	**194.9**
Age group at diagnosis (yrs)										
13–24	39.9	211.4	13.5	45.5	20.1	55.9	13.8	40.1	**19.1**	**67.0**
25–34	75.0	687.2	28.7	246.4	39.0	289.4	33.0	251.9	**40.0**	**319.3**
35–44	75.6	1,817.6	26.1	492.1	36.6	569.9	27.6	521.8	**37.0**	**705.6**
45–54	58.9	2,911.9	14.9	611.5	30.9	669.1	20.3	590.1	**29.1**	**949.9**
≥55	26.7	1,323.3	7.5	279.7	10.0	242.2	7.6	218.0	**11.4**	**397.4**
Residence area at diagnosis										
Urban**	55.5	1,247.5	20.7	329.4	30.6	375.2	23.5	324.2	**30.6**	**483.0**
Suburban††	47.2	1,001.5	14.3	194.9	18.3	204.0	10.2	139.5	**15.9**	**217.4**
Rural§§	31.8	1,577.6	8.5	145.1	16.4	197.6	6.0	95.6	**12.7**	**216.0**
Overall¶¶	**55.0**	**1,252.6**	**19.2**	**293.5**	**27.6**	**333.7**	**20.9**	**288.2**	**27.6**	**432.3**

* Estimates resulted from statistical adjustment that accounted for reporting delays and missing risk-factor information, but not for incomplete reporting.
† Per 100,000 persons. Rates for U.S. dependent areas are not provided because U.S. Census information on race/ethnicity for U.S. dependent areas is limited. Rates are not calculated by transmission category and by place of birth because of the lack of denominator data.
§ Hispanics or Latinos can be of any race.
¶ *Northeast:* Connecticut, Maine, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island; *Midwest:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South:* Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *West:* Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.
** Metropolitan area of ≥500,000 population.
†† Metropolitan area of 50,000–499,999 population.
§§ Nonmetropolitan area of <50,000 population.
¶¶ Because column totals for estimated numbers were calculated independently of the values for the subpopulations, the values in each column might not sum to the column total.

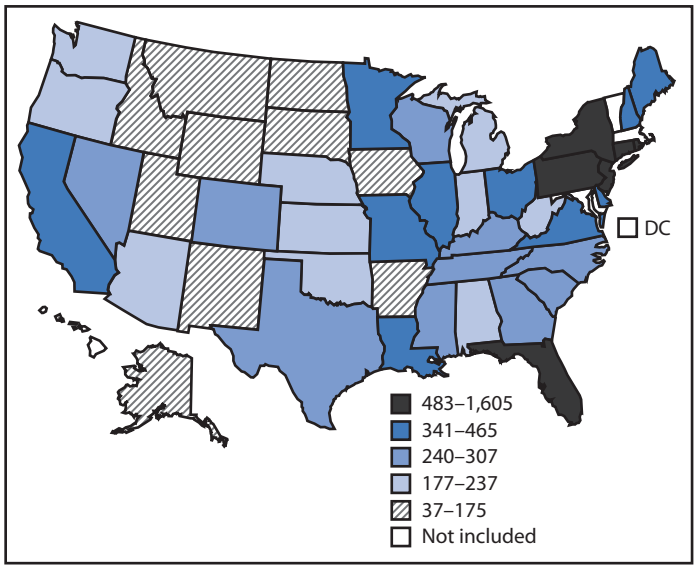
Latino population in 2010 (*5*) but 26.3% of new diagnoses of HIV infection. During the study period, the highest rate of new diagnoses of HIV infection and the highest prevalence rate of diagnosed HIV infection in Hispanics or Latinos were in the Northeast. The disproportionately high percentage of Hispanics or Latinos living with a diagnosis of HIV infection might pose a greater risk for HIV transmission for Hispanics or Latinos in the Northeast than in other regions (*6*).

Unlike the South and West regions, where Hispanics or Latinos tend to be of Mexican and Central American descent, 34.9% of Hispanics or Latinos in the Northeast are of Puerto Rican origin (*5*). Hispanics or Latinos in the Northeast are more likely to acquire HIV infection through IDU than Hispanics or Latinos in other regions, which might, in part, reflect an influence of the epidemiology of HIV transmission in Puerto Rico (*7*).

The South region had the second highest rate of new HIV diagnoses among Hispanics or Latinos. In the past 10 years, the South has experienced the largest percentage growth in the Hispanic or Latino population, possibly as a result of increased migration (*5*). Hispanic or Latino migrants in this region tend to be young, unaccompanied males. Studies have suggested that this population might be entering social surroundings with increased risks for HIV infection in their new environment (*8*).

The findings in this report are subject to at least three limitations. First, results are based on data from 46 states and Puerto Rico. However, these areas represent approximately 91.2% of reported acquired immunodeficiency syndrome (AIDS) diagnoses in the United States and the dependent areas, and states with high proportions of Hispanics or Latinos were included. Second, data were adjusted for reporting delay but not incomplete reporting, and statistical adjustment of data might have introduced uncertainties into estimates of diagnoses of HIV infections or of the number of persons living with a diagnosis of HIV infection. Finally, birthplace data were missing for 16.4% of Hispanics or Latinos newly diagnosed with HIV infection in 2010. Additionally, birthplace does not indicate where a person became HIV infected.

FIGURE. Estimated prevalence rate* of diagnosed HIV infection among Hispanics or Latinos† aged ≥13 years at the end of 2009 — 46 states



* Per 100,000 persons. Estimates resulted from statistical adjustment that accounted for reporting delay and missing risk-factor information, but not for incomplete reporting.

† Hispanics or Latinos might be of any race.

What is already known on this topic?

In the United States, Hispanics or Latinos are disproportionately affected by human immunodeficiency virus (HIV) infection. For example, in 2010, new diagnoses of HIV infection among Hispanics or Latinos occurred at an annual rate that was 2.8 times that of non-Hispanic whites.

What is added by this report?

In 2010, Hispanics or Latinos with a new diagnosis of HIV infection in the Northeast and Puerto Rico were more likely to have HIV infection attributed to injection-drug use than in other regions. Within the 46 states, the Northeast region had the highest rate of new HIV diagnoses among Hispanics or Latinos in 2010 and the highest prevalence rate of diagnosed HIV infection at the end of 2009.

What are the implications for public health practice?

HIV interventions should be tailored to the differing needs of populations in different geographic areas. Regionally specific HIV prevention efforts should be used to increase early diagnosis and linkage to care for Hispanics or Latinos. CDC's high-impact prevention approach could be used in high-risk Hispanic or Latino populations, particularly injection-drug users in the Northeast and Puerto Rico, those in rural areas, and recent immigrants to the South.

The National HIV/AIDS Strategy calls for intensified HIV prevention efforts in communities where HIV infection is most heavily concentrated, including Hispanic or Latino communities (*9*). The findings in this report suggest that HIV intervention efforts should be tailored to the characteristics and needs of the Hispanic or Latino population in different geographic areas. Regionally specific HIV prevention efforts should be used to increase early diagnosis and linkage to care for Hispanics or Latinos. CDC's high-impact prevention approach, a combination of scientifically proven, cost-effective, and scalable interventions (e.g., biomedical interventions, HIV testing and linkage to care, and individual and small group interventions), could be used in high-risk Hispanic or Latino populations, particularly injection-drug users in the Northeast and Puerto Rico, persons in rural areas, and recent immigrants to the South.

Acknowledgment

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Evaluation of Vaccination Recall Letter System for Medicaid-Enrolled Children Aged 19–23 Months — Montana, 2011

Reminder and recall systems alert the parents of children due (reminder) or overdue (recall) for vaccination and have been associated with increased vaccination coverage (*1*–*3*). To evaluate the potential of a state-generated recall letter to increase vaccination coverage among Montana children, the Montana Department of Public Health and Human Services (DPHHS) pilot tested a recall letter system targeted at parents of children aged 19–23 months enrolled in Montana Medicaid and not known to have completed a subset of the routinely recommended vaccination series. Data extracted from Medicaid billing records and the web-based immunization registry database (WIZRD) then in use by Montana were used to ascertain whether children were up-to-date for the study vaccination series. Of the 1,865 children enrolled in Montana Medicaid and aged 19–23 months, 878 (47%) were eligible for study participation. One recall letter was sent to parents of 438 (50%) eligible children selected randomly. A reassessment of each child's vaccination status was completed 3 months after the initial mailing. At 3 months, 32% of children whose parents were sent letters were known to have completed the study vaccination series, which was not significantly different from the 28% of children who were vaccinated but whose parents had not been sent letters. Further research is needed to determine why the recall letter had limited effectiveness in this pilot study and to develop more effective methods for increasing vaccination coverage in Montana.

The Advisory Committee on Immunization Practices recommends that children aged 0–18 months receive routine vaccinations for protection against diseases caused by 14 pathogens (*4*). Despite these recommendations, the National Immunization Survey reported that in 2009, for children aged 19–35 months, the estimated vaccination coverage nationally for the recommended modified series (the recommended series with *Haemophilus influenzae* type b conjugate vaccine [Hib] excluded because of a Hib shortage*) was just over 70% and coverage varied substantially among states (*5*). In Montana, the estimated coverage for the recommended modified series among children aged 19–35 months was 61.7%, ranking among the lowest 10 states. To improve vaccination coverage, the Task Force on Community Preventive Services recommends the use of reminder and recall systems (*2*). Vaccine reminder and recall systems alert the parents of children due or overdue for vaccinations and are effective at increasing child and adult vaccination coverage whether conducted by a health-care provider, academic center, or health department (*3*). The Montana DPHHS does not use a vaccine reminder and recall system of its own, relying instead on vaccine providers to contact parents of children overdue for vaccination. However, among surveyed health-care providers who provide vaccines to Montana adolescents, only 21% reported using reminder and recall systems. In response, DPHHS pilot tested a state-generated recall letter that was sent to parents of Medicaid-enrolled children aged 19–23 months and not known to be fully immunized with the study vaccination series.†

Children enrolled in Montana Medicaid with birthdates from December 2, 2008, through May 1, 2009, were assessed for coverage with the study vaccination series. For these children, data were extracted from Medicaid billing records and WIZRD and imported into the Comprehensive Clinic Assessment Software Application.§ Medicaid billing data were extracted on December 28, 2010, and included data entered through December 1, 2010. Children known to have received each of the vaccines in the study vaccination series or those with home addresses outside of Montana were excluded from study participation. The study was powered to have a 99.9% likelihood and a 72% likelihood of detecting a statistically significant difference given a 15 percentage-point difference and 6 percentage-point difference, respectively, between the intervention and control cohorts, assuming 250 children per cohort, $\alpha = 0.05$, and a two-sided test.

* The modified series, excluding *Haemophilus influenzae* type b conjugate vaccine (Hib), includes ≥4 doses of diphtheria, tetanus toxoid, and acellular pertussis vaccine (DTaP)/diphtheria and tetanus toxoids vaccine (DT)/diphtheria and tetanus toxoids and pertussis vaccine (DTP); ≥3 doses of inactivated poliovirus vaccine (IPV); ≥1 dose of measles antigen-containing vaccine (MMR); ≥3 doses of hepatitis B vaccine (HepB); ≥1 doses of varicella vaccine (VAR); and ≥4 doses of pneumococcal vaccine (PCV). Hib vaccine was excluded from national reporting of the vaccine series because of the Hib vaccine shortage that occurred during 2007–2009.

† The study vaccination series includes ≥4 doses of DTaP; ≥3 doses of IPV; ≥1 dose of MMR; ≥4 doses of Hib; ≥3 doses of HepB; ≥1 dose of VAR; and ≥4 doses of PCV.

§ Coverage for Hib vaccine for the primary series was based on receipt of ≥2 or ≥3 doses, depending on product received. The Merck Hib vaccines require a 2-dose primary series with doses at ages 2 months and 4 months, and the Sanofi Pasteur Hib vaccines require a 3-dose primary series with doses at ages 2, 4, and 6 months. Coverage for the full series, which includes the primary series and a booster dose, was based on receipt of ≥3 or ≥4 doses, depending on product received. Both Merck and Sanofi Pasteur Hib vaccines require a booster dose at ages 12–15 months (*5*). The number of Hib doses a child is eligible to receive is dependent upon the vaccine type, the age at series initiation, and the age at which the doses are administered. The number of PCV doses a child is eligible to receive is dependent upon the age at series initiation and the age at which the doses are administered. Therefore, children might not have been eligible to receive the number of Hib and/or PCV doses needed to be considered up-to-date for the purposes of this study.

What is already known on this topic?

The use of reminder and recall systems by health-care providers, academic centers, and health departments has been shown to be associated with increased vaccination coverage.

What is added by this report?

A single, state-generated recall letter did not significantly improve vaccination coverage in a rural, underserved, and underimmunized pediatric population in Montana.

What are the implications for public health practice?

Users of reminder and recall systems should adapt the system for the targeted patient population. Reminder and recall systems should be evaluated regularly to determine their effectiveness and modified, if necessary.

Using the Comprehensive Clinic Assessment Software Application random number generator tool, 50% of children not known to have completed the study vaccination series on December 1, 2010, were randomly assigned to the intervention cohort. On January 21, 2011, using addresses from Montana Medicaid, a letter was mailed to the parent(s) of each child reminding them to take their child to their health-care provider to receive the missed vaccines. The letters did not include an individualized listing of the missed vaccines. The remaining 50% of children were assigned to the control cohort (i.e., no letter). Letters returned as undeliverable were resent to addresses listed in WIZRD if different from the address listed in the Medicaid database. Letters were not resent if the Medicaid and WIZRD addresses were identical. In June 2011, a reassessment of vaccination status for each child was completed using the methodology for vaccines received through April 30, 2011. Pearson's chi-square test was used to evaluate the difference in participant characteristics, vaccines received by the intervention and control cohorts, and coverage for each cohort between baseline and follow-up.

Of the 1,865 children enrolled in Montana Medicaid and aged 19–23 months by December 1, 2010, a total of 878 (47%) were eligible for study participation (Table 1). Of those, 464 (53%) were male, and the median age was 21 months. Among the participants, 184 (21%) children were classified as American Indian/Alaska Native (AI/AN). Race information was not available for the other participants. The county of residence was categorized as rural or frontier[¶] for 87% of participants. Among participants, 357 (41%) had not received at least one or two of the recommended vaccines. The vaccines most commonly missing were the fourth dose of diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP), which 612 (70%) participants had not received, and the fourth dose of pneumococcal vaccine (PCV), which 539 (61%) participants had not received. No significant differences existed between the intervention and control cohorts for age, sex, AI/AN classification, population density for county of residence, and number of missing vaccines. Recall letters were sent to parents of 438 (50%) children; 83 (20%) of those letters initially were returned as undeliverable, of which 45 were resent.

Three months after the single recall letter was sent, 139 (32%) of the children whose parents had been sent a recall letter had completed the study vaccination series and 125 (28%) of control children had completed the series (p=0.28) (Table 2). For 14 (70%) of 20 vaccinations, the percentages of children who received the missing vaccine by 3 months was higher in the intervention cohort compared with the control cohort, but the difference was only statistically significant for the third and fourth doses of PCV. No significant differences were found between the cohorts for the percentage of 184 AI/AN children who completed the study vaccination series (intervention = 40.4%, control = 29.4%; p=0.12). Likewise, no significant differences were found when cohorts were stratified by county of residence for the 110 urban children (intervention = 34.4%, control = 43.5%; p=0.34), 537 rural children (intervention = 30.5%, control = 23.1%; p=0.06), and 231 frontier children (intervention = 33.3%, control = 34.1%; p=0.9). In this study, 30 recall letters would need to be sent to result in one extra child being up-to-date for the study vaccination series (95% confidence interval = 10.6–∞).

[¶] Frontier is defined as ≤6 persons per square mile and either ≥50 miles or 60-minute drive to essential services. Additional information is available at http://www.raconline.org/topics/frontier/frontierfaq.php#definition, and at http://www.nal.usda.gov/ric/ricpubs/what_is_rural.shtml.

Reported by

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Editorial Note

The findings in this study demonstrate that a single, state-generated recall letter to parents resulted in no significant increase in vaccination coverage among predominantly rural, Medicaid-enrolled children aged 19–23 months. Of children whose parents were not sent recall letters, 28% had completed the study vaccination series at 3 months. In comparison, 32% of children whose parents had been sent letters had completed the series.

Reminder and recall systems have been shown to be effective in increasing vaccination coverage in pediatric and adult populations; for universally recommended vaccines and targeted vaccines; when conducted by a health-care provider, an

TABLE 1. Participant characteristics at initiation of recall letter study among Montana Medicaid-enrolled children aged 19–23 months — Montana, 2011

Characteristic	Total		Intervention cohort		Control cohort		p-value*
	No.	(%)	No.	(%)	No.	(%)	
No. of participants†	**878**	**(100)**	438	(50)	440	(50)	
Sex							0.46
Male	**464**	**(53)**	237	(54)	227	(52)	
Female	**414**	**(47)**	201	(46)	213	(48)	
Median age	**21 mos**		21 mos		21 mos		
American Indian/Alaska Native§	**184**	**(21)**	89	(20)	95	(22)	0.64
County of residence¶							0.09
Urban	**110**	**(13)**	64	(15)	46	(10)	
Rural	**537**	**(61)**	269	(61)	268	(61)	
Frontier	**231**	**(26)**	105	(24)	126	(29)	
No. of missing vaccines							0.96
1–2	**357**	**(41)**	175	(40)	182	(41)	
3–5	**204**	**(23)**	101	(23)	103	(24)	
6–10	**121**	**(14)**	62	(14)	59	(13)	
11–20	**196**	**(22)**	100	(23)	96	(22)	
% vaccinated with selected vaccines**							
DTaP fourth dose	**266**	**(30)**	138	(32)	128	(29)	0.44
HepB third dose	**523**	**(60)**	253	(58)	270	(61)	0.28
Hib fourth dose††	**424**	**(48)**	211	(48)	213	(48)	0.94
IPV third dose	**539**	**(61)**	263	(60)	276	(63)	0.41
MMR first dose	**507**	**(58)**	246	(56)	261	(59)	0.34
PCV fourth dose§§	**339**	**(39)**	170	(39)	169	(38)	0.90
VAR first dose	**459**	**(52)**	221	(50)	238	(54)	0.28

Abbreviations: DTaP =diphtheria, tetanus toxoid, and acellular pertussis vaccine; HepB = hepatitis B vaccine; Hib = *Haemophilus influenzae* type b conjugate vaccine; IPV = inactivated poliovirus vaccine; MMR = measles, mumps, and rubella vaccine; PCV = pneumococcal vaccine; VAR = varicella vaccine.

* p-value calculated using chi-square test.

† Children living in Montana, enrolled in Montana Medicaid, with birthdates December 2, 2008–May 1, 2009, and not known to have received each of the following: ≥4 doses of DTaP; ≥3 doses of IPV; ≥1 dose of MMR; ≥4 doses of Hib; ≥3 doses of HepB; ≥1 dose of VAR; and ≥4 doses of PCV.

§ Data for other race classifications were not available.

¶ Categories based on U.S. Department of Agriculture descriptions, available at http://www.nal.usda.gov/ric/ricpubs/what_is_rural.shtml.

** The individual vaccines in this analysis represent the last possible dose in the selected vaccine's series that can be administered to a child aged 18 months.

†† Coverage for Hib vaccine for the primary series was based on receipt of ≥2 or ≥3 doses, depending on product received. The Merck Hib vaccines require a 2-dose primary series with doses at ages 2 months and 4 months, and the Sanofi Pasteur Hib vaccines require a 3-dose primary series with doses at ages 2, 4, and 6 months. Coverage for the full series, which includes the primary series and a booster dose, was based on receipt of ≥3 or ≥4 doses, depending on product received. The Merck and Sanofi Pasteur Hib vaccines require a booster dose at ages 12–15 months. The number of Hib doses a child is eligible to receive depends on the vaccine type, the age at series initiation, and the age at which the doses are administered. Therefore, children might not have been eligible to receive the number of Hib doses needed to be considered up-to-date for this study.

§§ The number of PCV doses a child is eligible to receive depends on the age at series initiation and the age at which the doses are administered. Therefore, children might not have been eligible to receive the number of doses needed to be considered up-to-date for this study.

academic center, or a health department; and, when carried out using postcards, mailed letters, or telephone calls (*3,6*). However, as found in this study, specific reminder and recall systems and methods are not effective in every setting. For example, among urban adolescent populations, text message reminders have been shown to significantly increase vaccination coverage while automated telephone messages have not (*7,8*).

Previous studies have shown the effectiveness of certain reminder and recall systems in rural settings. Reminder postcards were effective in improving vaccination coverage among a predominantly low-income, rural, and Latino pediatric population (*9*). That study differed from the investigation presented here in that the population was predominantly Hispanic, the system was community health center–based, and multiple mailings were used. In another study, automated telephone reminders and recalls conducted by rural county health departments in Georgia were effective at increasing immunization visits (*6*). Unlike the Montana investigation, the Georgia study used multiple attempts until contact was made with the parent. These findings highlight the importance of the exact methods chosen to implement a reminder and recall system.

Selecting the method most likely to be effective in a particular community might require pilot testing and an evaluation of the results. The findings of this investigation suggest that studies conducted in suburban and urban areas might not predict the success of interventions implemented in rural areas and certain types of reminder and recall systems might not be effective in rural settings. Compared with urban populations, rural populations are likely to be less educated, less affluent, and have less access to transportation (*10*); these factors and others might influence childhood vaccination coverage and the effectiveness of certain vaccine reminder and recall methods.

TABLE 2. Children eligible to receive the study vaccination series* and individual vaccines at baseline and number of eligible children vaccinated at 3 months following the mailing of a vaccine recall letter to parents of Montana Medicaid-enrolled children aged 19–23 months† — Montana, 2011

	Intervention cohort			Control cohort				
	Eligible to receive vaccine at baseline	Eligible children vaccinated at 3 mos		Eligible to receive vaccine at baseline	Eligible children vaccinated at 3 mos			
Study vaccination series	No.	No.	(%)	No.	No.	(%)	Odds ratio	(95% CI)
Participants	438	139	(32)	440	125	(28)	1.2	(0.9–1.6)
DTaP								
First dose	63	14	(22)	63	14	(22)	1.0	(0.4–2.3)
Second dose	101	22	(22)	93	16	(17)	1.3	(0.7–2.7)
Third dose	151	44	(29)	140	28	(20)	1.7	(1.0–2.8)
Fourth dose	300	101	(34)	312	102	(33)	1.0	(0.7–1.5)
HepB								
First dose	70	11	(16)	57	14	(25)	0.6	(0.2–1.4)
Second dose	104	37	(36)	87	39	(45)	0.7	(0.4–1.2)
Third dose	185	95	(51)	170	90	(53)	0.9	(0.6–1.4)
Hib§								
First dose	72	15	(21)	68	12	(18)	1.2	(0.5–2.9)
Second dose	91	11	(12)	95	12	(13)	1.0	(0.4–2.3)
Third dose	148	43	(29)	146	35	(24)	1.3	(0.8–2.2)
Fourth dose	227	47	(21)	227	39	(17)	1.3	(0.8–2.0)
IPV								
First dose	76	14	(18)	69	13	(19)	1.0	(0.4–2.2)
Second dose	106	25	(24)	102	19	(19)	1.3	(0.7–2.6)
Third dose	175	51	(29)	164	35	(21)	1.5	(0.9–2.5)
MMR								
First dose	192	60	(31)	179	50	(28)	1.2	(0.8–1.8)
PCV¶								
First dose	86	18	(21)	79	13	(16)	1.3	(0.6–3.0)
Second dose	110	24	(22)	107	16	(15)	1.6	(0.8–3.2)
Third dose	170	51	(30)	157	29	(18)	1.9	(1.1–3.2)
Fourth dose	268	49	(18)	271	26	(10)	2.1	(1.3–3.5)
VAR								
First dose	217	62	(29)	202	47	(23)	1.3	(0.9–2.0)

Abbreviations: DTaP = diphtheria, tetanus toxoid, and acellular pertussis vaccine; HepB = hepatitis B vaccine; Hib = *Haemophilus influenzae* type b conjugate vaccine; IPV = inactivated poliovirus vaccine; MMR = measles, mumps, and rubella vaccine; PCV = pneumococcal vaccine; VAR = varicella vaccine; CI = confidence interval.

* The study vaccination series includes ≥4 doses of diphtheria, tetanus toxoid, and acellular pertussis vaccine (DTaP); ≥3 doses of inactivated poliovirus vaccine (IPV); ≥1 dose of measles, mumps, and rubella vaccine (MMR); ≥4 doses of *Haemophilus influenzae* type b conjugate vaccine (Hib); ≥3 doses of hepatitis B vaccine (HepB); ≥1 dose of varicella vaccine (VAR); and ≥4 doses of pneumococcal vaccine (PCV).

† Children living in Montana, enrolled in Montana Medicaid, with birthdates December 2, 2008–May 1, 2009, and not known to have received each of the following: ≥4 doses of DTaP; ≥3 doses of IPV; ≥1 dose of MMR; ≥4 doses of Hib; ≥3 doses of HepB; ≥1 dose of VAR; and ≥4 doses of PCV.

§ Coverage for Hib vaccine for the primary series was based on receipt of ≥2 or ≥3 doses, depending on product type received. The Merck Hib vaccines require a 2-dose primary series with doses at ages 2 months and 4 months, and the Sanofi Pasteur Hib vaccines require a 3-dose primary series with doses at ages 2, 4, and 6 months. Coverage for the full series, which includes the primary series and a booster dose, was based on receipt of ≥3 or ≥4 doses, depending on product type received. The Merck and Sanofi Pasteur Hib vaccines require a booster dose at ages 12–15 months. The number of Hib doses a child is eligible to receive depends on the vaccine type, the age at series initiation, and the age at which the doses are administered. Therefore, children might not have been eligible to receive the number of Hib doses needed to be considered up-to-date for this study.

¶ The number of PCV doses a child is eligible to receive depends on the age at series initiation and the age at which the doses are administered. Therefore, children might not have been eligible to receive the number of doses needed to be considered up-to-date for this study.

The findings in this report are subject to at least seven limitations. First, recall letters were not sent by certified mail; therefore, no confirmation that the intended recipients received the letters was obtained. A low percentage of successfully delivered letters might diminish the difference in vaccination coverage between the intervention and control cohorts. Second, an average delay of 4 weeks occurs between administration of a vaccine and Montana Medicaid's receipt of the health-care provider's billing statement. However, health-care providers have up to 1 year to bill Medicaid for vaccines administered, so delays in billing for some vaccines might hide some differences in vaccination coverage between intervention and control cohorts. Third, only 93% of public health-care providers and 74% of private health-care providers are known to be active users of

WIZRD (DPHHS, unpublished data, 2011). Therefore, the immunization rates presented in this study might be underestimated. Fourth, children with delayed initiation of the PCV or Hib series might have been eligible to receive fewer doses of those vaccines and thus be considered up-to-date per Advisory Committee on Immunization Practices recommendations but underimmunized for PCV or Hib for this study. Fifth, only a single recall letter was sent; the use of multiple letters might have resulted in higher vaccination coverage. Sixth, the children sent letters might have differed from the children not sent letters regarding certain factors that were not assessed; these factors might have diminished the impact of the letters in increasing vaccination coverage. Finally, the medical records of study participants were not available for review; thus, the completeness of the vaccination status for each child cannot be confirmed.

This intervention aimed at increasing vaccination coverage among children enrolled in Montana Medicaid by mailing a single, state-generated vaccine recall letter to their parents resulted in no significant increase in vaccination coverage of their children. Based on these findings and a review of the literature, 1) health-care providers should use reminder and recall systems to improve vaccination coverage among their patients (*1,2*); 2) state and local health departments should use the reminder and recall system(s) most likely to improve vaccination coverage in their population; 3) users of reminder and recall systems should evaluate their system to determine its effectiveness and adjust their strategy as needed to improve system performance; and 4) public health authorities should conduct further research to identify effective reminder and recall system(s) for improving vaccination coverage, particularly in rural underserved areas.

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Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine for Adults with Immunocompromising Conditions: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

On June 20, 2012, the Advisory Committee on Immunization Practices (ACIP) recommended routine use of 13-valent pneumococcal conjugate vaccine (PCV13; Prevnar 13, Wyeth Pharmaceuticals, Inc., a subsidiary of Pfizer, Inc.) for adults aged ≥19 years with immunocompromising conditions, functional or anatomic asplenia, cerebrospinal fluid (CSF) leaks, or cochlear implants (Table). PCV13 should be administered to eligible adults in addition to the 23-valent pneumococcal polysaccharide vaccine (PPSV23; Pneumovax 23, Merck & Co. Inc.), the vaccine currently recommended for these groups of adults (*1*). The evidence for the benefits and risk of PCV13 vaccination of adults with immunocompromising conditions was evaluated using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) framework and designated as a Category A recommendation (*2,3*). This report outlines the new ACIP recommendations for PCV13 use; explains the recommendations for the use of PCV13 and PPSV23 among adults with immunocompromising conditions, functional or anatomic asplenia, CSF leaks, or cochlear implants; and summarizes the evidence considered by ACIP to make its recommendations.

Epidemiology of Pneumococcal Infection in Immunocompromised Adults

Streptococcus pneumoniae (pneumococcus) remains a leading cause of serious illness, including bacteremia, meningitis, and pneumonia among adults in the United States. An estimated 4,000 deaths occur in the United States each year because of *S. pneumoniae,* primarily among adults (*4*). The incidence of invasive disease ranges from 3.8 per 100,000 among persons aged 18–34 years to 36.4 per 100,000 among those aged ≥65 years (*4*). Adults with certain medical conditions also are at increased risk for invasive pneumococcal disease (IPD). For adults aged 18–64 years with hematologic cancer, the rate of IPD in 2010 was 186 per 100,000, and for persons with human immunodeficiency virus (HIV) the rate was 173 per 100,000 (CDC, unpublished data, 2012). The disease rates for adults in these groups can be more than 20 times those for adults without high-risk medical conditions.

PCV13 has been used for children since 2010, when it replaced an earlier version targeting seven serotypes (PCV7; Prevnar, Pfizer) that had been in use since 2000. The routine use of PCV7 in infants and young children resulted in significant reductions in IPD caused by vaccine serotypes in children, and because of indirect effects, also in adults. Rates of IPD caused by vaccine serotypes in adults aged 18–64 years without HIV decreased from six cases to one case per 100,000 during 2000–2007. However, even after indirect effects of the pediatric immunization had been realized fully, the incidence of IPD caused by the serotypes included in PCV7 remained high in HIV-infected persons aged 18–64 years at 64 cases per 100,000 persons with acquired immunodeficiency syndrome (AIDS) (*5*). Moreover, 50% of IPD cases among immunocompromised adults in 2010 were caused by serotypes contained in PCV13; an additional 21% were caused by serotypes only contained in PPSV23 (CDC, unpublished data, 2011).

> Recommendations for routine use of vaccines in children and adolescents are developed by the Advisory Committee on Immunization Practices (ACIP). ACIP is chartered as a federal advisory committee to provide expert external advice and guidance to the Director of CDC on use of vaccines in the civilian population of the United States. Recommendations are harmonized to the greatest extent possible with recommendations made by the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), and the American College of Obstetrics and Gynecology (ACOG). Recommendations for routine use of vaccines in adults are harmonized with recommendations of AAFP, ACOG, and the American College of Physicians. ACIP recommendations adopted by the Director of CDC become recommendations of the agency on the date published in *MMWR*.

PCV13 Vaccine in Adults

PCV13 was licensed by the Food and Drug Administration (FDA) for prevention of IPD and otitis media in infants and young children in February 2010, supplanting PCV7 (*6*). PCV13 is identical in formulation for the seven common serotypes in PCV7, but it includes six additional antigens. One dose of PCV13 is recommended by ACIP for children aged 6–18 years with high-risk conditions such as functional or anatomic asplenia, immunocompromising conditions, cochlear implants, or CSF leaks. In December 2011, FDA licensed PCV13 for prevention of pneumonia and IPD in adults aged ≥50 years (*7*). The license for adult use was granted under FDA's

accelerated approval pathway, which allows the agency to approve products for serious or life-threatening diseases on the basis of early evidence of a product's effectiveness that is reasonably likely to predict clinical benefit. Approval of PCV13 for adults was based on immunogenicity studies that compared antibody responses to PCV13 with antibody responses to PPSV23 (*7*).

In two randomized, multicenter immunogenicity studies conducted in the United States and Europe, immunocompetent adults aged ≥50 years received a single dose of PCV13 or PPSV23 (*8*). In adults aged 60–64 years and aged >70 years, PCV13 elicited opsonophagocytic activity (OPA) geometric mean antibody titers (GMTs) that were comparable with, or higher than, responses elicited by PPSV23. OPA GMTs elicited by PCV13 in adults aged 50–59 years for all 13 serotypes were comparable with the corresponding GMTs elicited by administration of PCV13 in adults aged 60–64 years. Persons who received PPSV23 as the initial study dose had lower opsonophagocytic antibody responses after subsequent administration of a PCV13 dose 1 year later than those who had received PCV13 as the initial dose (*8*). Data on the immunogenicity of PCV13 in immunocompromised adults are not available.

Safety of PCV13 was evaluated in approximately 6,000 PPSV23-naïve and PPSV23-experienced adults aged ≥50 years (*8*). Overall incidence of serious adverse events reported within 1 month of an initial study dose was <2% for both vaccines, with no significant differences between treatment groups. Common adverse reactions reported with PCV13 were pain, redness, and swelling at the injection site; limitation of movement of the injected arm; fatigue; and headache (*8*). Safety studies presented for licensure did not enroll immunocompromised subjects.

Although clinical trial data are not yet available for PCV13, a randomized, controlled trial of PCV7 efficacy among 496 HIV-infected adults in Malawi demonstrated vaccine efficacy of 75% (95% confidence interval = 29%–92%) in preventing IPD (*9*). The study population differed from the general U.S. HIV-infected population, however, in that all participants had survived a previous episode of IPD, only 13% were on antiretrovirals, and the all-cause mortality rate was >25%. The number of serious adverse events within 14 days after vaccination was significantly lower (three versus 17; p=0.002) in the vaccine group (248 persons) than in the placebo group (248 persons), whereas minor adverse events were significantly more common in the vaccine group (41 versus 13; p=0.003) (*9*).

Four studies of PCV7 immunogenicity involving 699 HIV-infected subjects, all with CD4 counts of >200 cells/μL, were conducted in the United States and Europe. Antibody response to a single dose of PCV7 was comparable with PPSV23 for the serotypes evaluated, at all times studied (*10–13*). When PPSV23 and PCV7 were administered in series, greater immune response was demonstrated when PCV7 was given first (*8,11*). None of the studies were designed to evaluate the optimal interval between doses; however, in another study, no evidence of blunting of an immune response to PCV7 was observed when a dose of PPSV23 was given 5 years (range: 3.5–6.6 years) before a dose of PCV7 (*14*).

PPSV23 Vaccine

PPSV23 contains 12 of the serotypes included in PCV13, plus 11 additional serotypes. PPSV23 is recommended for prevention of IPD among all adults aged ≥65 years, and for adults at high risk aged 19–64 years (*1,3*). Although conflicting evidence regarding PPSV23 efficacy in HIV-infected adults has been published (*15,16*), the GRADE evaluation reviewed by ACIP concluded that potential benefits from PPSV23 use in this population outweigh any potential harms. Given the high burden of IPD caused by serotypes in PPSV23 but not in PCV13, broader protection might be provided through use of both pneumococcal vaccines.

The current ACIP PPSV23 recommendations call for vaccination of adults at high risk aged 19–64 years at the time of diagnosis of the high-risk condition. A one-time revaccination dose of PPSV23 is recommended 5 years after the first dose for persons with functional or anatomic asplenia and for immunocompromised persons (Table). All adults are eligible for a dose of PPSV23 at age 65 years, regardless of previous PPSV23 vaccination; however, a minimum interval of 5 years between PPSV23 doses should be maintained (*1*).

Cost-Effectiveness

A cost-effectiveness analysis was performed using a lifetime cohort model of an implemented vaccine program wherein persons with selected immunocompromising conditions were immunized with PCV13 at the time of diagnosis and then followed current PPSV23 vaccination guidelines starting 1 year later. PCV13 vaccine efficacy against IPD and pneumonia (used as a proxy for effectiveness in the model) was 75% and 13%, respectively, for persons with HIV/AIDS and persons requiring dialysis, and 25% and 0%, respectively, for persons with hematologic cancer and for organ transplant recipients. Using the current costs of PCV13, PPSV23, and administration, the modeled program resulted in a cost saving of $7,600,000, added 1,360 quality-adjusted life years, and averted 57 cases of IPD (CDC, unpublished data, 2012). These savings accrued largely as a result of protection among patients on dialysis and those with HIV/AIDS. Heterogeneity across risk groups was driven by differences in pneumococcal serotypes causing disease and assumed vaccine efficacy in each subgroup. The model was sensitive to assumptions about vaccine efficacy, whereby increased estimation of PCV13 efficacy led to increases in cost-effectiveness.

ACIP Recommendations for PCV13 and PPSV23 Use

Adults with specified immunocompromising conditions who are eligible for pneumococcal vaccine should be vaccinated with PCV13 during their next pneumococcal vaccination opportunity.

Pneumococcal vaccine-naïve persons. ACIP recommends that adults aged ≥19 years with immunocompromising conditions, functional or anatomic asplenia, CSF leaks, or cochlear implants, and who have not previously received PCV13 or PPSV23, should receive a dose of PCV13 first, followed by a dose of PPSV23 at least 8 weeks later (Table). Subsequent doses of PPSV23 should follow current PPSV23 recommendations for adults at high risk. Specifically, a second PPSV23 dose is recommended 5 years after the first PPSV23 dose for persons aged 19–64 years with functional or anatomic asplenia and for persons with immunocompromising conditions. Additionally, those who received PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years, or later if at least 5 years have elapsed since their previous PPSV23 dose.

Previous vaccination with PPSV23. Adults aged ≥19 years with immunocompromising conditions, functional or anatomic asplenia, CSF leaks, or cochlear implants, who previously have received ≥1 doses of PPSV23 should be given a PCV13 dose ≥1 year after the last PPSV23 dose was received. For those who require additional doses of PPSV23, the first such dose should be given no sooner than 8 weeks after PCV13 and at least 5 years after the most recent dose of PPSV23.

Reported by

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Members of the Advisory Committee on Immunization Practices; member roster for July 2011–June 2012 available at http://www.cdc.gov/vaccines/acip/committee/members-archive/members-07-2011-06-2012.html.

TABLE. Medical conditions or other indications for administration of 13-valent pneumococcal conjugate vaccine (PCV13), and indications for 23-valent pneumococcal polysaccharide vaccine (PPSV23) administration and revaccination for adults aged ≥19 years,* by risk group — Advisory Committee on Immunization Practices, United States, 2012

		PCV13	PPSV23	
Risk group	Underlying medical condition	Recommended	Recommended	Revaccination 5 yrs after first dose
Immunocompetent persons	Chronic heart disease†		✓	
	Chronic lung disease§		✓	
	Diabetes mellitus		✓	
	Cerebrospinal fluid leak	✓	✓	
	Cochlear implant	✓	✓	
	Alcoholism		✓	
	Chronic liver disease, cirrhosis		✓	
	Cigarette smoking		✓	
Persons with functional or anatomic asplenia	Sickle cell disease/other hemaglobinopathy	✓	✓	✓
	Congenital or acquired asplenia	✓	✓	✓
Immunocompromised persons	Congenital or acquired immunodeficiency¶	✓	✓	✓
	Human immunodeficiency virus infection	✓	✓	✓
	Chronic renal failure	✓	✓	✓
	Nephrotic syndrome	✓	✓	✓
	Leukemia	✓	✓	✓
	Lymphoma	✓	✓	✓
	Hodgkin disease	✓	✓	✓
	Generalized malignancy	✓	✓	✓
	Iatrogenic immunosuppression**	✓	✓	✓
	Solid organ transplant	✓	✓	✓
	Multiple myeloma	✓	✓	✓

* All adults aged ≥65 years should receive a dose of PPSV23, regardless of previous history of vaccination with pneumococcal vaccine.
† Including congestive heart failure and cardiomyopathies, excluding hypertension.
§ Including chronic obstructive pulmonary disease, emphysema, and asthma.
¶ Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).
** Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.

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Severe Respiratory Illness Associated with a Novel Coronavirus — Saudi Arabia and Qatar, 2012

On October 4, 2012, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

CDC is working closely with the World Health Organization (WHO) and other partners to better understand the public health risk presented by a recently detected, novel coronavirus. This virus has been identified in two patients, both previously healthy adults who suffered severe respiratory illness (*1,2*). The first patient, a man aged 60 years from Saudi Arabia, was hospitalized in June 2012 and died; the second patient, a man aged 49 years from Qatar with onset of symptoms in September 2012 was transported to the United Kingdom for intensive care. He remains hospitalized on life support with both pulmonary and renal failure (*3,4*). Person-to-person or health-care–associated transmission has not been identified to date (*5*). Interim case definitions based on acute respiratory illness and travel history were issued by WHO on September 29 and include criteria for "patient under investigation," "probable case," and "confirmed case" (*6*). This information is current as of October 4. Updates on the investigation and the WHO case definition are available at http://www.who.int/csr/don/en/index.html.

Coronaviruses are a large, diverse group of viruses that affect many animal species. A few of these viruses cause a wide range of respiratory illness in humans, typically with "common cold" symptoms. Genetic sequence data indicate that this new virus is a beta-coronavirus similar to bat coronaviruses, but not similar to any other coronavirus previously described in humans, including the coronavirus that caused severe acute respiratory syndrome (SARS) (*1*). Comparison of viral genetic sequences from the two patients indicated that the two viruses are closely related. Treatment is supportive because no specific therapy has been shown to be effective.

WHO and CDC have not issued any travel alerts at this time. The risk to U.S. residents traveling in the region currently is estimated to be low. For persons traveling to Saudi Arabia to participate in the Hajj, scheduled for October 24–29, 2012, requirements and recommendations remain unchanged and can be found at http://www.cdc.gov/features/Hajj.

Persons who develop acute respiratory illness within 10 days after returning from Saudi Arabia or Qatar (excluding persons who only passed through airports) should consult a physician and mention their recent travel. Persons with acute severe lower respiratory illness requiring hospitalization should be evaluated using the guidance at the CDC coronavirus website (http://www.cdc.gov/coronavirus/ncv), which is based on the WHO case definition. Persons whose respiratory illness remains unexplained and who meet the WHO criteria for "patient under investigation" should be reported immediately to CDC through state and local health departments. At present, testing of specimens for the novel coronavirus will be conducted by CDC; widely available diagnostic tests for coronaviruses are not suitable for detecting this new virus.

Recommendations and guidance on the case definitions, infection control including personal protective equipment, case investigation, and specimen collection and shipment, are available at the CDC coronavirus website. Because of the possibility of frequent updates as new information becomes available, readers are encouraged to consult the CDC coronavirus website for current information. State and local health departments with questions should contact the CDC Emergency Operations Center (770-488-7100).

Reported by

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Announcements

World Arthritis Day 2012

October 12, 2012, is World Arthritis Day. Started in 1996, World Arthritis Day serves as a focus for organizations and individuals to work toward increasing awareness of arthritis and other rheumatic conditions worldwide. In the United States, 50 million adults and 300,000 children have some form of arthritis or other rheumatic condition (*1*). Arthritis is the most common cause of disability in the United States (*2*). By 2030, CDC projects that 67 million persons will be affected by arthritis, and among those, 25 million will be limited in their usual activities (*3*).

This year's theme is "Move to Improve." For persons with arthritis, aerobic and muscle strengthening exercises can reduce pain; improve mobility, function, and mood; and delay disability, helping them to stay independent, keep working, and participate in valued social activities (*4*). Physical activity also can help persons with arthritis to manage their other chronic conditions, such as heart disease, diabetes, and obesity. Low impact, moderate intensity activities such as walking, cycling, water exercise, and fitness classes are safe and effective for persons with arthritis. The current recommendation for adults, including those with arthritis, is 150 minutes (2.5 hours) of moderate intensity physical activity per week. That can be achieved with 30 minutes of activity at least 5 days per week. Activity can be broken into 10–15 minute sessions and spread throughout the day.

CDC funds 12 state health departments to implement and disseminate physical activity, self-management education, and health communications campaigns targeting adults with arthritis. During 2008–2011, these 12 states delivered evidence-based self-management education or physical activity programs to >132,000 persons with arthritis. Additional information on World Arthritis Day is available at http://www.worldarthritisday.org.

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Global Handwashing Day — October 15, 2012

The fifth annual Global Handwashing Day will be observed on October 15, 2012. This observance increases awareness and understanding of handwashing with soap as an effective and affordable method of preventing disease around the world.

Handwashing with soap has an important role to play in child survival and health. About 2.2 million children aged <5 years die each year from diarrheal diseases or pneumonia, the top two killers of young children worldwide (*1*). Handwashing is not only simple and inexpensive, but handwashing with soap can reduce the incidence of diarrhea by 30% (*2*) and respiratory infections by 21% (*3*) among children aged <5 years.

Although persons around the world clean their hands with water, very few use soap to wash their hands. Washing hands with soap removes bacteria much more effectively (*4*).

Additional information on Global Handwashing Day is available from CDC at http://www.cdc.gov/features/globalhandwashing. General handwashing information is available at http://www.cdc.gov/handwashing. Information on water-related hygiene is available at http://www.cdc.gov/healthywater/hygiene/index.html.

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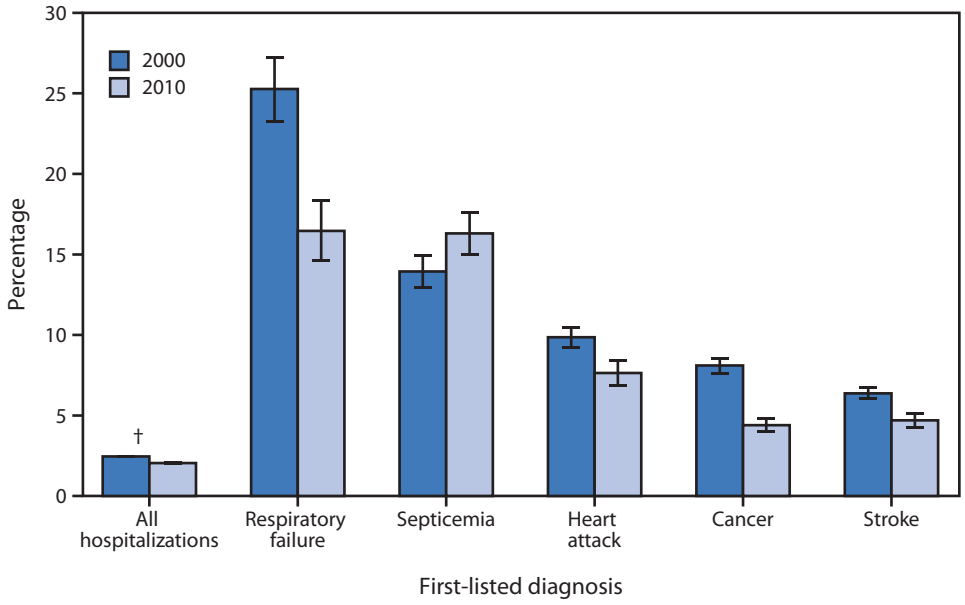
QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Hospitalizations Ending in Death, by Selected First-Listed Diagnoses* — National Hospital Discharge Survey, United States, 2000 and 2010



* Data are for first-listed diagnosis coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) coding system. The codes for respiratory failure are 518.81, 518.83, and 518.84; septicemia 038; heart attack 410; cancer 140–209.36, 209.70–209.75, 209.79, and 230–234; and stroke 430–438. The percentage of hospital deaths was calculated by dividing the number of inpatients who died in the hospital within each category by the total number of inpatients in that category and then multiplying the resulting decimal by 100 to convert it to a percentage. Changes for the period 2000–2010 were tested using a trend test based on all data years.

† 95% confidence interval.

In both 2000 and 2010, 2% of all hospitalizations in the United States ended in death. The percentage of patients who died while hospitalized declined from 2000 to 2010 for inpatients with first-listed diagnoses of respiratory failure (25% compared with 17%), heart attack (10% compared with 8%), cancer (8% compared with 4%), and stroke (6% compared with 5%). By comparison, the percentage of inpatients hospitalized for septicemia who died in the hospital increased from 14% in 2000 to 16% in 2010.

Source: National Hospital Discharge Survey data, 2000–2010. Available at http://www.cdc.gov/nchs/nhds.htm.

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Data presented by the Notifiable Disease Data Team and 122 Cities Mortality Data Team in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333 or to *mmwrq@cdc.gov.*

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