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Transmission of *Mycobacterium tuberculosis* in a High School and School-Based Supervision of an Isoniazid-Rifapentine Regimen for Preventing Tuberculosis — Colorado, 2011–2012

Mycobacterium tuberculosis, the bacterium that causes tuberculosis (TB), is spread from person to person by the airborne route. It can be transmitted extensively in congregate settings, making investigating exposures and treating infected contacts challenging. In December 2011, a student at a Colorado high school with 1,381 students and school personnel received a diagnosis of pulmonary TB disease. One of five household contacts had TB disease, and the other four had latent *M. tuberculosis* infection (LTBI). Screening of 1,249 school contacts (90%) found one person with pulmonary TB disease, who was fully treated, and 162 with LTBI, of whom 159 started an LTBI treatment regimen for preventing progression to TB disease and 153 completed a regimen. Only the index patient required inpatient care for TB, and TB caused no deaths. Use of short-course treatment regimens, either 12-dose weekly isoniazid and rifapentine directly observed at school or 4 months of self-supervised rifampin daily, facilitated treatment completion. State and county incident command structures led by county TB control authorities guided a response team from multiple jurisdictions. News media reports brought public scrutiny, but meetings with the community addressed the concerns and enhanced public participation. Two contacts of the index patient outside of the school had TB disease diagnosed after the school investigation. As of July 2013, no additional TB disease associated with in-school exposure had been found. An emergency plan for focusing widespread resources, an integral public communications strategy, and new, efficient interventions should be considered in other large TB contact investigations.

TB disease is confirmed by detection of *M. tuberculosis* by culture or nucleic acid amplification, or it can be diagnosed clinically from symptoms and chest radiography findings that are consistent with TB and resolve with treatment (*1*). In most instances, a clinical diagnosis includes positive results from an immunologic test for *M. tuberculosis* infection, either the tuberculin skin test (TST) or an interferon gamma release assay (IGRA) blood test (*1*,*2*). LTBI is diagnosed by positive TST or IGRA results, absence of TB disease symptoms, and a normal chest radiograph or a stable abnormal chest radiograph with tests of sputum negative for *M. tuberculosis* (*1*–*3*).

Index Patient

In late December 2011, a student at a high school with 1,381 students and school personnel in Longmont, Colorado, was admitted to a hospital after 2 months of cough, fever, and night sweats. The student was U.S.-born, and the only TB risk (*3*) was living abroad at age 8–10 years in a country with a TB disease incidence 10 times greater than that for the United States. The chest radiograph showed a pulmonary cavity, and sputum-smear microscopy revealed acid-fast bacilli. Both findings are markers for potential contagiousness. The *M. tuberculosis* from sputum culture was susceptible to isoniazid, rifampin, ethambutol, and pyrazinamide, and treatment with the standard four-drug regimen was completed in September 2012.

Contact Investigations

Persons who had spent the most time indoors with the index patient, as determined from interviews with the patient and later from school records, were tested for *M. tuberculosis*

INSIDE

Continuing Education examination available at http://www.cdc.gov/mmwr/cme/conted_info.html#weekly.

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infection ahead of others (*4*). All five members of the household had positive IGRA results. One had culture-confirmed genito-urinary TB disease and a normal chest radiograph, with an *M. tuberculosis* genotype matching that of the index patient. A second person was initially treated for possible TB disease but after 2 months of a four-drug regimen was determined to have had LTBI (*1*,*3*). The other three had LTBI and took 4 months of daily rifampin for preventing TB disease (*3*).

The index patient's six teachers and 13 students who shared at least two classes were tested by IGRA (Table). None had TB disease, but 10 (53%) of 19 had LTBI. Testing was then extended to 140 additional students who shared only one class with the patient. One received a diagnosis of TB disease initially, but the diagnosis was changed to LTBI after 2 months of four-drug treatment; 49 (35%) were diagnosed with LTBI.

The findings suggested *M. tuberculosis* transmission at the school; therefore, the investigation was extended to all students and school personnel enrolled or working during the fall 2011 semester. Because TB disease typically develops 6–18 months after initial *M. tuberculosis* infection (*5*), prompt diagnosis and treatment of LTBI were urgent. The rapid evaluation of approximately 1,000 additional contacts with IGRA was not feasible at the local laboratory; a combined strategy using IGRA and TST was adopted. Students and school personnel who had lived outside the United States, who had been vaccinated with bacille Calmette-Guérin (BCG), or who reported a positive TST result were tested with IGRA and all others with TST (*2*).

During 12 screening clinics held at the school from mid-February to mid-March, public health personnel interviewed and tested 1,053 contacts, and 37 more were screened in other settings, for a total of 1,090 (89.2%) of the 1,222 who were sought (Table). One had pulmonary TB disease diagnosed by chest radiography, but a negative sputum culture result, and was fully treated; 102 (8.3%) were diagnosed with LTBI. Combined with the earlier groups of school contacts, a total of 1,249 (90.4%) of 1,381 school contacts were evaluated: four who had previously been treated for LTBI were evaluated with a chest radiograph only, 435 were tested with IGRA, and 810 received TST.

Treatment of Infected School Contacts

Contacts with LTBI were offered a choice between self-supervised daily isoniazid for 9 months or rifampin for 4 months until a rifapentine supply was secured in late February 2012. Then, once-weekly isoniazid and rifapentine for 12 weeks supervised at school by directly observed therapy (*6*) was recommended preferentially. Among the 90 contacts known to have been offered the latter regimen, 60 chose it, as well as five others for whom the options that were offered were not recorded. The workers supervising the doses used telephone calls, text messages, and home visits to encourage adherence and consulted daily with public health nurses about problems such as missed doses. Because rifampin and rifapentine can

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TABLE. Rates of *Mycobacterium tuberculosis* infection among groups of school contacts* of a student with tuberculosis (TB) disease, by decreasing durations of exposure — Colorado, 2011–2012

Group†	Sought	Medically evaluated§	Initial diagnosis		Final diagnosis		Infection rate (%)¶
			TB disease	LTBI	TB disease	LTBI	
Students who had two or more classes with the index patient and teachers**	19	19	0	10	0	10	53
Students who had one class with the index patient	140	140	1	49	0	50	36
All others	1,222	1,090	1	102	1	102	9
Overall school contacts	**1,381**	**1,249**	**2**	**161**	**1**	**162**	**13**

Abbreviation: LTBI = latent *M. tuberculosis* infection.

* Does not include five household contacts who were evaluated before the investigation at the school and 20 nonschool social contacts who were sought after the investigation.

† Mutually exclusive contact groups, listed by decreasing relative durations of exposure.

§ Fully medically evaluated for LTBI or TB disease; interviewed for TB symptoms and tested individually as medically indicated.

¶ Total infections (TB disease and LTBI) for the group; denominator is the number of contacts fully medically evaluated.

** The six teachers of the index patient, regardless of number of classes; other teachers and school personnel are grouped with "All others."

reduce the effectiveness of hormonal contraceptives, condoms were offered at the public health clinics.

Overall, 162 (13%) school contacts of the index patient had LTBI. This included the person who completed 2 months of four-drug treatment for TB disease before the diagnosis was changed to LTBI and whose treatment was regarded as sufficient (*1*,*3*). Of the remaining 161 contacts with LTBI, 159 (99%) started treatment, of whom 153 (96%) completed it. Treatment completion was similar by LTBI regimen: three of three (100%) for 9 months of isoniazid, 88 of 91 (97%) for 4 months of rifampin, and 61 of 65 (94%) for 12 doses of once-weekly isoniazid and rifapentine. One of the four not completing the latter regimen completed 9 months of isoniazid.

Of the three contacts who did not complete the rifampin regimen, two stopped for unknown reasons. The other had treatment interrupted because of an adverse event (rash). Then isoniazid was prescribed, but it was discontinued because of another adverse event (hepatitis). Of the four contacts not completing the isoniazid-rifapentine regimen, one stopped for unknown reasons after 6 doses. Three had their treatment interrupted because of adverse events. One had headache, nausea, and depression and completed 9 months of daily isoniazid. One had rash, dizziness, and blurred vision that recurred with daily isoniazid and declined further treatment. One had fever, aches, malaise, and interactions between rifapentine and other medications and declined further treatment.

Response Capacity, Communications, and Community Relations

The surge in workload exceeded the capacity of the local health department. Colorado officials activated public health preparedness programs for the state and Denver and Boulder counties, which established an incident command structure led by the TB control authorities of Denver and Boulder counties. Eighty-one persons from seven city or county health departments and the state health department, two county medical reserve corps members, and representatives from two schools of nursing and one school district served at the in-school screening clinics, with 43 of these persons attending multiple sessions. Five registered nurses from four health departments, who were supported by one clerk, counseled the patients, administered the first directly observed doses of isoniazid-rifapentine and provided the monthly supplies of isoniazid or rifampin for daily self-supervised treatment. Two persons from CDC were reassigned from other state health department duties to supervise the weekly isoniazid-rifapentine regimen at the school, 1 month each consecutively, followed by two Denver Metro TB Clinic outreach workers who supervised doses at the school and then at homes after summer vacation began. The workload for the screening clinics was 885 person-hours and for the LTBI treatment was 890 person-hours, which included 560 person-hours for supervising isoniazid-rifapentine doses and tracing patients who missed doses. These measures of workload did not include the hours spent planning, keeping records, and communicating with the public or the hours spent investigating the earlier groups of contacts in the school and other settings.

In mid-January 2012, local news media began featuring the investigation. This was followed by Internet social media reporting, including perceptions that students were dying from TB, that illegal immigrants brought the TB, and that the school would be closed. Throughout the contact investigation, public health and school officials convened public meetings with

school personnel, students, their families, and news reporters to address concerns and perceptions about TB. At follow-up meetings, the officials reported the progress of the investigation and showed evidence that transmission had ended. The importance of preventing future TB disease by completing LTBI treatment was stressed.

The index patient did not disclose 20 nonschool social contacts until December 2012, when one had developed pleural TB disease with negative culture results. Nine others were completely evaluated, and two had LTBI. The remaining 10 were either not found or not completely evaluated. One had left Colorado and was diagnosed with culture-confirmed TB disease in another jurisdiction in 2013. The genotypes for the *M. tuberculosis* isolates from that patient matched those from the index patient. As of July 2013, no additional TB disease in school contacts had been reported, and no additional *M. tuberculosis* isolates with this genotype had been found in Colorado.

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Editorial Note

Colorado is a low-incidence TB state, with 64 cases of TB disease reported in 2012 for a rate of less than 1.4 per 100,000 person-years, compared with 3.2 per 100,000 in 2012 for the United States overall. TB contact investigations, especially those in congregate settings, are intrinsically complex and labor-intensive (*4*), requiring mobilization of a large, flexible workforce for a prolonged response. This investigation at a high school demonstrated how an emergency response plan can gather widely dispersed expertise to one site. Augmenting the local health department with additional personnel expedited the evaluation of more than 1,200 contacts and the treatment of those who were infected. Transmission of *M. tuberculosis* at schools is unusual, but this investigation found that numerous contacts had been infected, particularly those who had shared classes with the index patient. The absence of TB disease in school contacts after the investigation indicates that the interventions were effective.

The Colorado experience with the weekly 12-dose isoniazid-rifapentine regimen is one of the earliest reported after the controlled clinical trials (*6*). The regimen shows promise for congregate settings, where treatment is convenient for the patients and efficient for the health department. Adverse events in this report resembled those in the treatment trials and limited or changed treatment for three of 65 patients. CDC is collaborating with health departments and institutions nationwide in collecting data on this regimen in routine usage.

Of contacts initially diagnosed with LTBI in this investigation, 99% started treatment, which exceeded the 2010 U.S. treatment-start rate of 72% (Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC, unpublished data, 2010). The two short-course regimens including either rifampin or rifapentine for LTBI treatment probably contributed to the treatment completion rate of 98% of those starting an LTBI-specific regimen. For Colorado overall, the treatment completion rate for infected contacts who started self-supervised daily isoniazid in 2007–2011 was 73% (Colorado Department of Public Health and Environment, unpublished data, 2013), although in this report, all three contacts who started this regimen completed it. For the United States overall, the completion rate in 2010 was 68%. The campaign for public education in Colorado might have facilitated the successes at the school.

What is already known on this topic?

Tuberculosis (TB), caused by a contagious airborne bacterium, can be widely transmitted in congregate settings. Tracing contacts and treating new infections are complex, time-intensive, interventions in congregate settings, and completion of treatment for preventing TB is historically 70% or less. An investigative approach starting with contacts who had the most exposure, with interim analyses of findings, clarifies the need for including contacts with less exposure. In jurisdictions with low TB incidence, TB control programs might not have sufficient local resources to respond to extensive transmission.

What is added by this report?

Screening at a school of 1,249 (90.4%) contacts of a student with TB found one person with pulmonary TB disease and 162 with latent *Mycobacterium tuberculosis* infection (LTBI), of whom 159 started LTBI treatment regimens for preventing progression to TB disease and 153 completed a regimen. A state emergency response plan pulled together dozens of health professionals, who devoted hundreds of hours to testing persons who were exposed to TB and providing care for those with TB disease and LTBI.

What are the implications for public health practice?

TB control programs and other public health agencies should be aware that investigating TB in a school can outstrip the response capabilities of local agencies and require large-scale mobilization with state and county leadership. Public health agencies should have a plan for keeping the public informed and educated about TB and apportion the necessary resources to meet the acute needs until they are resolved.

Drug-susceptible TB disease is curable, but its historical reputation as a lethal contagious disease generates stigma, and misinformation can amplify fears. When communicating to the public about a crisis, the information should be simple, credible, accurate, consistent, and on time. One of the best ways to counter the public's fears is to provide useful information about the event and let them know what they can do (*7*).

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Estimating Meningitis Hospitalization Rates for Sentinel Hospitals Conducting Invasive Bacterial Vaccine-Preventable Diseases Surveillance

The World Health Organization (WHO)–coordinated Global Invasive Bacterial Vaccine-Preventable Diseases (IB-VPD) sentinel hospital surveillance network provides data for decision making regarding use of pneumococcal conjugate vaccine and *Haemophilus influenzae* type b (Hib) vaccine, both recommended for inclusion in routine childhood immunization programs worldwide (*1,2*). WHO recommends that countries conduct sentinel hospital surveillance for meningitis among children aged <5 years, including collection of cerebrospinal fluid (CSF) for laboratory detection of bacterial etiologies (*3*). Surveillance for pneumonia and sepsis are recommended at selected hospitals with well-functioning laboratories where meningitis surveillance consistently meets process indicators (e.g., surveillance performance indicators) (*3*). To use sentinel hospital surveillance for meningitis to estimate meningitis hospitalization rates, WHO developed a rapid method to estimate the number of children at-risk for meningitis in a sentinel hospital catchment area. Monitoring changes in denominators over time using consistent methods is essential for interpreting changes in sentinel surveillance incidence data and for assessing the effect of vaccine introduction on disease epidemiology. This report describes the method and its use in The Gambia and Senegal.

WHO-coordinated IB-VPD sentinel hospital surveillance for meningitis is established at large (usually pediatric) referral hospitals. A limitation of sentinel surveillance has been the inability to calculate meningitis incidence rates because of the absence of a known denominator of children at-risk for meningitis. In 2012, WHO, under the guidance of a technical advisory group, developed a method for estimating the denominator of at-risk children to calculate hospitalization rates for meningitis among children in the catchment area of a sentinel hospital (*4*). The method was finalized based on results of pilot tests conducted in IB-VPD surveillance network countries and is similar to a method recently developed for influenza sentinel hospital surveillance (Anthony Mounts, MD, Global Influenza Programme, WHO, personal communication, March 1, 2013).

Estimation of the denominator begins with determining whether population estimates for children aged <5 years are available by district* from census, civil registration, or other administrative data, and whether hospital admission log books or other hospital sources contain information on patient place of residence. If residence information is missing or can not be determined for a large number of cases, the method can not be applied. If these data are available, sentinel hospital records are reviewed to identify all children aged <5 years admitted with suspected meningitis during a recent 2–3 year period. For surveillance, WHO defines suspected meningitis as illness in a child aged <5 years with a clinical diagnosis of meningitis or with sudden onset of fever (>101.3°F [>38.5°C] rectal or >100.4°F [>38.0°C] axillary) and either neck stiffness, altered consciousness with no alternative diagnosis, or other meningeal signs (*5*). For this retrospective record review, an admission diagnosis of meningitis or an indication for lumbar puncture also met the surveillance case definition. Under the WHO method, hospital admission registers, specimen collection logbooks, laboratory records of CSF specimens received, and IB-VPD surveillance databases are reviewed for the specified time period. Individual patient charts are not reviewed. Patients aged <5 years with suspected meningitis are identified, and information on residence is abstracted. To produce reliable estimates, ≥100 suspected meningitis cases should be identified over a minimum of 2 (ideally consecutive) years.

Cases are spot-mapped by district of residence to visualize geographical dispersion and outliers. Districts are then rank-ordered according to the number of cases, and district-specific hospitalization rates for children aged <5 years are calculated using administrative population estimates. Using this rank-order, the sentinel hospital geographical catchment area is defined as those districts where 80% of suspected meningitis patients reside; the catchment area may be adjusted to fewer or more districts based on district-specific rates or expert local opinion. Expert national opinion is then sought to identify nonsentinel hospitals likely to admit at least 10% as many children aged <5 years with suspected meningitis as the sentinel hospital among children residing in the sentinel hospital's geographical catchment area. These nonsentinel hospitals are visited and the number of children with suspected meningitis residing in the sentinel hospital catchment area is determined by reviewing clinical, laboratory, and residence data, using the same methods as at the sentinel hospital. The denominator of at-risk children is estimated by multiplying the population aged <5 years in the identified districts by the percentage of suspected meningitis patients aged <5 years who are admitted

* Smallest administrative unit for which population estimates are available.

to sentinel hospitals. For example, if 90 of 100 patients among catchment area residents are admitted to the sentinel hospital and 10 cases are admitted to nonsentinel hospitals, the total at-risk population aged <5 years would be 90% of the children residing in the geographic catchment area. Annual meningitis hospitalization rates and 95% confidence intervals (CIs) were calculated using the mid-P exact test in OpenEpi software.

Pilot testing of the method was conducted in The Gambia and Senegal during 2012 to assess its feasibility. Before the assessment, Hib vaccines were introduced in the routine childhood immunization programs in both countries (Table), and one IB-VPD sentinel hospital in each country's capital city conducted sentinel surveillance for meningitis among children aged <5 years. Pneumococcal conjugate vaccine was introduced in The Gambia 1 year before the data abstraction period (Table). In The Gambia and Senegal, catchment areas comprising five districts accounted for 87% and 79%, respectively, of suspected meningitis patients admitted to the sentinel hospital, with total populations aged <5 years of 130,794 and 300,842, respectively. Among catchment area residents aged <5 years, nonsentinel hospitals accounted for 13% of suspected meningitis admissions in The Gambia (one hospital) and 21% of suspected meningitis admissions in Senegal (two hospitals). The annual sentinel hospitalization rate for suspected meningitis was 42.8 per 100,000 population (CI = 34.9–52.0) in The Gambia and 119.8 (CI = 110.3–130.0) in Senegal.

Sentinel hospitals conducting IB-VPD surveillance need to maintain consistent practices, including case identification, specimen collection, and laboratory procedures, among a stable at-risk population of children to monitor meningitis trends over time. Time trends are used to assess changes in admissions for suspected meningitis, laboratory-confirmed infections, and serotype or strain of causative organisms after vaccine introductions. This report describes a method for estimating denominators of at-risk children to better understand sentinel hospital surveillance data. Use of this method is limited to geographic areas with existing administrative population estimates, large sentinel hospitals that admit ≥100 children aged <5 years with suspected meningitis over a 2-year period (a minimum of 2 years is required because the incidence of meningitis can vary substantially from year-to-year), and hospitals with easily accessed records that include residence information. Accuracy depends on quality of population estimates and hospital records. Ideally, the denominator should be reassessed every 2 years, because population migration and changes in health-care–seeking can occur over time.

Because most children with meningitis are treated as inpatients, with admissions generally limited to a small number of health facilities that have the capacity to care for severely ill patients, this method may also be used to estimate meningitis incidence. However, the hospitalization rate might underestimate or overestimate actual meningitis incidence rates because children with meningitis might die at home, and some might be misdiagnosed on admission or diagnosed differently at sentinel versus nonsentinel hospitals. Thus, rates derived using this method should be interpreted cautiously; in developing

TABLE. Results of pilot testing to estimate the annual hospitalization rate for suspected meningitis at sentinel hospitals participating in the World Health Organization (WHO)–coordinated invasive bacterial vaccine preventable diseases surveillance network during 2010–2011 — The Gambia and Senegal, 2012

Characteristic	The Gambia	Senegal
Year vaccine introduced		
Hib3	1997	2005
PCV	2009	N/A
Estimated 2011 coverage for children aged <12 months (%)*		
Hib3	(96)	(83)
PCV	(93)	N/A
Suspected meningitis admissions among children aged <5 years from the geographic catchment area		
Admitted to sentinel hospital†	97	567
Admitted to nonsentinel hospitals	15	154
Population of children aged <5 years in geographic catchment area		
Annual total	130,794	300,842
Annual total adjusted for nonsentinel admissions	113,277	236,584
Population adjusted for 2-year analysis period	226,554	473,169
Annual hospitalization rate for suspected meningitis (95% confidence interval)§	42.8 (34.9–52.0)	119.8 (110.3–130.0)

Abbreviations: Hib3 = third dose of *Haemophilus influenzae* type b vaccine; PCV = pneumococcal conjugate vaccine; N/A = not available.

* Coverage based on joint WHO and United Nations Children's Fund (UNICEF) estimate, Additional information available at http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragehib3.html.

† Sentinel hospitals: Royal Victoria Teaching Hospital, Banjul, The Gambia; Albert Royer Hospital, Dakar, Senegal.

§ Per 100,000 children aged <5 years residing in the geographic catchment area during the period of record abstraction, adjusted for nonsentinel hospital utilization.

countries with poor population access to health care, these estimated incidence rates likely represent minimum estimates. In sentinel hospitals with reliable and consistent laboratory diagnostic practices, IB-VPD surveillance can be used to estimate hospitalization rates for probable bacterial meningitis[†] as well as laboratory-confirmed Hib or pneumococcal meningitis. Such hospitals with at least 2 years of pre-PCV introduction data can assess trends in the rates of laboratory-confirmed pneumococcal meningitis before and after vaccine introduction. Comparison with Hib and pneumococcal meningitis incidence estimates for children aged <5 years from WHO's Global Burden of Disease project[§] or rigorous epidemiologic studies can help assess the validity of incidence rates calculated using this rapid assessment method.

WHO provides support to countries to strengthen national capacity to better monitor and evaluate vaccination programs by using cased-based surveillance with laboratory confirmation, a goal of the Global Vaccine Action Plan.[¶] During 2012, a total of 57 countries reported meningitis sentinel surveillance data to the WHO-coordinated IB-VPD surveillance network. The ability to calculate rates of hospitalization for suspected meningitis strengthens the global IB-VPD surveillance network's ability to compare data among sites, over time, and with special studies (e.g., vaccine impact evaluations).

[†] WHO defines probable bacterial meningitis as a suspected meningitis case with CSF examination showing at least one of the following: 1) turbid appearance, 2) leukocytosis (>100 cells/mm^3), or 3) leukocytosis (10–100 cells/mm^3) and either an elevated protein (>100 mg/dL) or decreased glucose (<40 mg/dL). If protein and glucose results are not available, diagnosis is made using the first two conditions (i.e., turbid appearance or leukocytosis [>100 cells/mm^3]).

[§] Additional information available at http://www.who.int/immunization_monitoring/burden/Pneumo_hib_estimates/en/index2.html.

[¶] Additional information available at http://www.who.int/immunization/global_vaccine_action_plan/en.

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Announcements

Application Deadline for The CDC Experience Applied Epidemiology Fellowship — December 6, 2013

The CDC Experience is a 1-year fellowship in applied epidemiology for third- and fourth-year medical students. Eight competitively selected fellows spend 10–12 months at CDC in Atlanta, Georgia, where they conduct epidemiologic analyses in areas of public health that interest them. The fellowship provides opportunities to enhance skills in research and analytic thinking, written and oral scientific presentations, and the practices of preventive medicine and public health.

Through this training, fellows acquire practical knowledge for approaching population-based health problems. Graduates of The CDC Experience have an appreciation of the role of epidemiology in medicine and health and are able to apply their knowledge and skills to enhance their clinical acumen and help improve the quality of the U.S. health-care system.

Information on applying for The CDC Experience is available at http://www.cdc.gov/cdcexperiencefellowship. Applications for the class of 2014–15 must be submitted by December 6, 2013. Questions can be e-mailed to Virginia Watson, program coordinator, at vwatson1@cdc.gov.

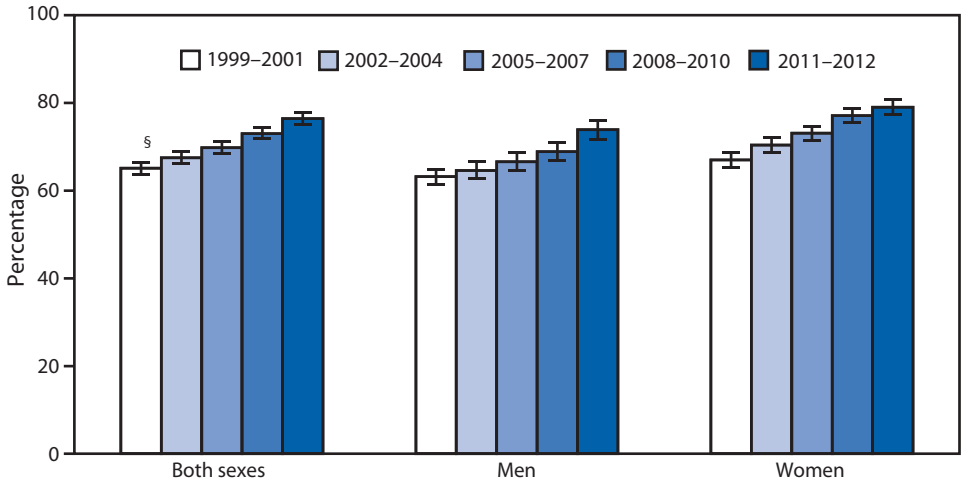
Opioid Overdose Prevention Toolkit Released

The Substance Abuse Mental Health Services Administration has released the Opioid Overdose Prevention Toolkit. The toolkit is the first federal resource promoting safety and prevention information for persons at risk for overdose, such as how to recognize and respond appropriately to overdose, specific drug-use behaviors to avoid, and the role of naloxone in preventing fatal overdose. The toolkit equips communities and local governments with material to develop policies and practices to help prevent and respond appropriately to opioid-related overdose. Prescribers will find evidence-based guidance for safe prescribing practices, identifying patients at risk for overdose, engaging them in prevention and risk-reduction efforts, and accessing opioid-dependence treatment. The toolkit is available at http://store.samhsa.gov/product/opioid-overdose-prevention-toolkit/all-new-products/sma13-4742.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Adults Aged 18–24 Years Who Had Never Smoked Cigarettes,* by Sex — National Health Interview Survey, United States, 1999–2001 Through 2011–2012†



* Never smoked cigarettes or smoked fewer than 100 cigarettes in lifetime.
† Estimates are annualized averages for each period and are based on household interviews of a sample of the civilian, noninstitutionalized U.S. adult population. Denominator excludes persons with unknown cigarette smoking status.
§ 95% confidence interval.

The percentage of young adults aged 18–24 years who had never smoked cigarettes increased by more than 10 percentage points from 1999–2001 (65%) to 2011–2012 (76%). The increase was noted for men and for women. For each period, women were more likely than men to have never smoked cigarettes.

Sources: Schoenborn CA, Adams PF, Barnes PM, Vickerie JL, Schiller JS. Health Behaviors of Adults: United States, 1999–2001. Vital Health Stat 2004;10(219).

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