Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly/ Vol. 64 / No. 54
August 11, 2017

Summary of Notifiable Noninfectious Conditions and Disease Outbreaks: Surveillance Data Published Between April 1, 2016 and January 31, 2017 — United States

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

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The *MMWR* series of publications is published by the Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

Suggested citation: Centers for Disease Control and Prevention. [Summary of Notifiable Noninfectious Conditions and Disease Outbreaks, 2015]. Published August 11, 2017 for MMWR Morb Mortal Wkly Rep 2015;64(No. 54):[inclusive page numbers].

Summary of Notifiable Noninfectious Conditions and Disease Outbreaks: Surveillance Data Published Between April 1, 2016 and January 31, 2017 — United States

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Preface

The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks: Surveillance Data Published Between April 1, 2016 and January 31, 2017 — United States*, herein referred to as the *Summary* (*Noninfectious*), contains official statistics for nationally notifiable noninfectious conditions and disease outbreaks. This *Summary* (*Noninfectious*) is being published in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases and Conditions* (*1*). Data on notifiable noninfectious conditions and disease outbreaks from prior years have been published previously (*2*,*3*).

The *Summary* (*Noninfectious*) includes a synopsis of major findings from published surveillance reports for nationally notifiable noninfectious conditions and disease outbreaks, internet links to the complete published surveillance reports, and links to data and tables displaying current and historical descriptive statistics for each condition. Providing detailed descriptive current year and historical data and tables online makes the data more accessible and usable to the public. Surveillance summaries and other published reports on each condition will now present major statistical findings and trends and summarize what public health programs are doing to address the condition, evidence-based recommendations for prevention and control of the condition, and how persons, workers, and community groups can use the combination of information to improve their health. An additional benefit of these changes is that the CDC programs responsible for noninfectious conditions and disease outbreaks will develop and publish reports for each notifiable condition as the data become available. This approach minimizes delays that can occur when collating data from multiple programs into a single report.

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This *Summary* (*Noninfectious*) presents the highlights of surveillance information published between April 1, 2016 and January 31, 2017 (surveillance period varied) on five of nine nationally notifiable noninfectious conditions (Box): cancer, elevated blood lead levels among children aged <5 years, foodborne disease outbreaks, and acute nonoccupational and occupational pesticide-related illness and injury. Although no published surveillance findings for carbon monoxide poisoning, elevated blood lead levels among adults, waterborne disease outbreaks, and silicosis were available for inclusion in this annual summary, the most recent data for these and the other five conditions are available at https://wonder.cdc.gov. The data presented in the referenced publications and in the internet links are the most recent available to CDC.

Background

A brief history of the reporting of nationally notifiable conditions in the United States is available at https://wwwn.cdc.gov/nndss/history.html. In 1961, responsibility for the collection and publication of data on nationally notifiable diseases was transferred to CDC from the National Office of Vital Statistics. CDC's collection of data on nationally notifiable noninfectious conditions and disease outbreaks is based primarily on surveillance conducted at the local, state, and territorial levels by health departments and other agencies on reportable conditions in each jurisdiction. Legislation, regulations, or other rules in those jurisdictions require health care providers, hospitals, laboratories, and others to provide information on reportable conditions to public health authorities or their agents. The list of reportable conditions in each jurisdiction varies over time

BOX. Noninfectious conditions and disease outbreaks designated by CSTE and CDC as nationally notifiable*

- Cancer
- Carbon monoxide poisoning
- Lead, elevated blood levels
  - Lead, elevated blood levels, adults
  - Lead, elevated blood levels, children
- Foodborne disease outbreaks
- Waterborne disease outbreaks
- Pesticide-related illness and injury, acute (nonoccupational and occupational)
- Silicosis

* A list of nationally notifiable conditions by year is available at https://wwwn.cdc.gov/nndss/conditions.

and across jurisdictions. The most authoritative and up-to-date information on reportable diseases is often available on health department web sites. Selected historical summary information about reportable diseases and conditions across reporting jurisdictions is available at http://www.cste.org/?SRCA. Public health surveillance of noninfectious conditions and disease outbreaks at the local, state, and territorial levels protects the public's health by ensuring the proper identification of conditions and health hazards. Local public health officials use these data to monitor trends in these conditions, identify populations or geographic areas at high risk, plan prevention and control policies and other interventions, allocate resources effectively, coordinate activities, and assess the effectiveness of their efforts. Local, state, and territorial health departments also use these data to assist the federal government in meeting requirements under the International Health Regulations to identify, respond to, and share information about adverse health events that might constitute a public health emergency of international concern. More information regarding the International Health Regulations is available at https://www.cdc.gov/globalhealth/ihr.

A selected set of reportable conditions is designated as nationally notifiable. Local, state, and territorial health departments and other agencies in their jurisdictions (e.g., departments of labor, environmental protection agencies, cancer registries, and their agents) voluntarily submit notifiable conditions data to CDC. Public health officials at state, local, and territorial health departments and CDC collaborate in identifying conditions to consider for national notification. The Council of State and Territorial Epidemiologists (CSTE), in consultation with CDC, recommends revisions to the list of nationally notifiable conditions. Conditions are added to the list as emerging pathogens, environmental hazards, or conditions emerge as public health concerns. Conditions are deleted from the list when surveillance is not found to be useful. Lists of nationally notifiable conditions and surveillance case definitions used for classifying and counting cases consistently at the national level across jurisdictions are available at https://wwwn.cdc.gov/nndss/conditions. Similar to local public health officials, CDC uses these data to monitor trends; develop, implement, and maintain programs; allocate resources; and assess the effectiveness of prevention and control efforts.

Although the sources of data for nationally notifiable infectious diseases and for nationally notifiable noninfectious conditions and disease outbreaks are the same (i.e., local, state, and territorial jurisdictions' data on reportable conditions) and have the same general purpose (i.e., monitoring and responding to the condition to improve population health), a number of differences should be considered when comparing findings across conditions and by time, location, and demographic characteristic (*4–14*). Under-reporting of noninfectious conditions and disease outbreaks to local and state health departments occurs, and the completeness of reporting, and therefore of notifications to CDC, varies by condition (*4–14*). Moreover, variations in data collection methods also influence comparative observations across conditions and disease outbreaks. For example, case-based surveillance of acute pesticide-related illness or injury, elevated blood lead levels, and cancer is focused on collecting information on cases that meet the criteria specified in national condition-specific case definitions and on collecting information about those persons' conditions. In contrast, surveillance of outbreaks of foodborne and waterborne illness seeks to identify clusters of sick persons with a common exposure (as opposed to persons with a specific disease). Foodborne disease outbreaks are defined as two or more cases of similar illness resulting from common ingestion of a food. Waterborne disease outbreaks are defined as two or more cases of a similar illness resulting from common exposure to water or water-associated chemicals (https://wwwn.cdc.gov/nndss/conditions/notifiable/2014/outbreaks). For these conditions, information is collected about the characteristics of the disease outbreaks, including data from epidemiologic and environmental investigations.

Even among conditions for which case-based surveillance methods are used, substantial variation exists. For example, for elevated blood lead levels, laboratory findings are used to identify persons who have been exposed to a hazard but clinical diagnosis of lead poisoning is not required to be counted as a case. In contrast, for many other conditions, a diagnosis based on clinical and/or pathological criteria is needed to meet the case definition for a notification to CDC (https://wwwn.cdc.gov/nndss/conditions/notifiable/2014/non-infectious-conditions).

The date of the occurrence of the condition is defined differently among the conditions. For cancer, as for some

infectious diseases, including tuberculosis and human immunodeficiency virus infection, the date of occurrence is assigned on the basis of the date that the condition is diagnosed. For silicosis, the date of occurrence represents the date of the initial report (e.g., the date of a hospital discharge report, clinician report, or a workers' compensation claim). For lead screening test results, the date of occurrence is the date that the sample was tested. For acute pesticide-related illness, the date of occurrence is the date of pesticide exposure, which generally is identical to the date of symptom onset because symptom onset typically occurs within seconds to hours of exposure. For disease outbreaks, the date of occurrence represents the date of the illness onset of the first case in the outbreak.

The sources and definitions of race and ethnicity also vary over time and among conditions. For example, information about race and ethnicity for lead exposure is based on self-report. However, for cancer incidence, it is based on medical records, which might not be based on self-report, or from matching the names of persons with cancer with lists of surnames for different ethnic groups or with tribal registries. For silicosis, race and ethnicity are based on self-report, report from next-of-kin, or from medical records. Race- and ethnicity-specific information among the conditions also might vary depending on the jurisdictions' systems for submitting notifications to CDC and the need to protect private health information.

There are also variations across conditions in terms of which specific U.S. Census Bureau data sets were used to calculate rates of occurrence of the conditions. There might be additional notable differences among the "Highlights for Selected Conditions" section of this annual *Summary* (*Noninfectious*) in the criteria the CDC programs use to determine which case notifications are summarized and published in different venues. Current and historical data for each condition are accessible at https://wonder.cdc.gov/WelcomeT.html.

Highlights for Selected Conditions

Cancer

Cancer incidence and mortality statistics for 2013, the most recent year for which incidence data are available, were published previously (*4*). Data summarized from this published report came from the official source of federal statistics on cancer, the United States Cancer Statistics (USCS) system. USCS includes cancer incidence data from population-based cancer registries that participate in CDC's National Program of Cancer Registries (NPCR) and the National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) program reported as of November 2015. USCS also includes cancer mortality data from death certificate information reported to state vital statistics offices as of June 2015 that are compiled into a national file for the entire United States by CDC's National Center for Health Statistics (NCHS) National Vital Statistics System (NVSS).

In 2013, a total of 1,559,130 invasive cancers were diagnosed in the United States, an annual incidence rate of 439 cases per 100,000 persons (based on data from cancer registries that met data quality criteria for 2013 only). In the same year, approximately 584,872 persons died of cancer nationally, an annual death rate of 163 deaths per 100,000 persons. Overall and for many cancer sites, males had higher incidence and death rates than females. By race, blacks had the highest cancer incidence and death rates whereas American Indians/Alaska Natives had the lowest cancer incidence and Asians/Pacific Islanders had the lowest cancer death rates. By ethnicity, overall and for most cancer sites, Hispanics had lower cancer incidence and death rates than non-Hispanics.

Four cancer sites accounted for 48% of all cases diagnosed in 2013, including 230,815 female breast cancers, 212,584 lung and bronchus cancers (111,907 among men and 100,677 among women), 176,450 prostate cancers, and 136,119 colon and rectum cancers (71,099 among men and 65,020 among women). These four sites also accounted for 47% of cancer deaths in 2013, including 156,176 lung cancer deaths (85,658 among men and 70,518 among women), 51,813 colon and rectum cancer deaths (27,230 among men and 24,583 among women), 40,860 female breast cancer deaths, and 27,681 prostate cancer deaths.

Nationally, invasive cancer incidence rates declined from 484 cancer cases per 100,000 population in 1999 to 432 cases in 2013 (based on data from cancer registries that met data quality criteria for all years 1999–2013). During 1999–2013, cancer death rates declined from 201 deaths per 100,000 persons in 1999 to 163 deaths per 100,000 persons in 2013. By state, overall cancer incidence rates (all cancer sites combined) in 2013 ranged from 364 to 512 cases per 100,000 persons, and overall cancer death rates ranged from 128 to 199 deaths per 100,000 persons. The *Healthy People 2020* target for overall cancer death rate (161.4 deaths per 100,000) has been reached in 21 states. A complete summary of 2013 cancer data is available at https://www.cdc.gov/mmwr/volumes/66/ss/ss6604a1.htm?s_cid=ss6604a1_w.

Elevated Blood Lead Levels in Children Aged <5 Years

Analysis for blood lead levels (BLLs) of children aged <5 years during 2009–2014 are available and have been published previously (*6*). Data summarized from this published report were collected and compiled from raw data extracts sent by

state and local health departments to CDC's Childhood Blood Lead Surveillance (CBLS) system by March 31, 2015. CDC's Healthy Homes and Lead Poisoning Prevention Program manages surveillance data for childhood BLLs in the United States.

In 2014, a total of 30 state health departments, the District of Columbia, and New York City reported childhood blood lead data to CDC. From those states, 8,856 children aged <5 years had a newly confirmed BLL ≥10 micrograms per deciliter (μg/dL). Also in 2014, a total of 76,680 children aged <5 years had a single blood lead test result 5–9 μg/dL. In 2012, during the middle of this analysis, CDC's Advisory Committee recommended using a reference range to identify elevated BLLs, reducing the level from 10 μg/dL to 5 μg/dL.

Of the 8,856 children aged <5 years with newly confirmed BLLs ≥10 μg/dL, 36% were identified during August–October. Two geographic areas (the eastern north central and mid-Atlantic) accounted for 68% of the newly confirmed BLLs ≥10 μg/dL and approximately 49% of the children aged <5 years tested and reported to CDC in 2014. Nine state and local health departments in those two areas report data to CDC.

During the preceding 6 years, the numbers of newly confirmed children aged <5 years with BLLs ≥70 μg/dL ranged from 16 to 28. Changes in the number of states reporting data to CDC over these 6 years make it difficult to show any clear trend or pattern. These children had BLLs at least seven times above the *Healthy People 2010* goal. A complete summary of 2009–2014 blood lead data for children aged <5 years is available at https://www.cdc.gov/mmwr/volumes/66/ss/ss6603a1.htm?s_cid=ss6603a1_w.

Foodborne Disease Outbreaks

CDC conducts surveillance of foodborne disease outbreaks in the United States through the Foodborne Disease Outbreak Surveillance System. Public health agencies in all 50 states, the District of Columbia, and U.S. territories voluntarily submit reports of outbreaks investigated by their agencies using a web-based reporting platform, the National Outbreak Reporting System (https://www.cdc.gov/nors). This report includes foodborne disease outbreaks reported by February 17, 2016, in which the first illness occurred in 2014.

The 864 foodborne disease outbreaks reported in 2014 resulted in 13,246 illnesses, 712 hospitalizations, 21 deaths, and 21 food recalls. A single etiologic agent was confirmed in 462 (53%) outbreaks, resulting in 8,810 (67%) illnesses. Norovirus was the most common cause of confirmed, single-etiology outbreaks, accounting for 157 (34%) outbreaks and 3,835 (44%) illnesses. *Salmonella* was next, accounting for 140 (30%) outbreaks and 2,395 (27%) illnesses, followed by *Campylobacter*, which caused 24 (5%) confirmed single-etiology outbreaks and 324 (4%) illnesses. Fish (43 outbreaks), chicken (23 outbreaks), and dairy (19 outbreaks, of which 15 were attributable to unpasteurized products) were the most common single food categories implicated. The most outbreak-associated illnesses were from seeded vegetables (e.g., cucumbers or tomatoes) (428 illnesses), chicken (354 illnesses), and dairy products (267 illnesses). As reported in previous years, among outbreaks reporting a single location of preparation (742 outbreaks), restaurants (485 [65%]), specifically restaurants with sit-down dining (394 [53%]), were the most commonly reported locations of food preparation implicated during outbreak investigations (*7*). A complete summary of the 2014 foodborne disease outbreaks data is available at https://www.cdc.gov/foodsafety/fdoss/data/annual-summaries.

Acute Nonoccupational and Occupational Pesticide-Related Illness and Injury Incidence

Public health surveillance of acute nonoccupational and occupational pesticide-related illness and injury serves a vital societal role by enabling CDC and public health authorities to assess the magnitude and characteristics of this condition. Tracking the associated health effects of pesticides can help ensure that no pesticides pose an unreasonable burden (*8*). Using surveillance data collected between 1998 and 2015, CDC documented illness and injury for four different pesticides (*9*–*11*). The magnitude, characteristics, and root causes for acute paraquat- and diquat-related illnesses identified in the United States during 1998–2011 were reported (*9*). At the time these data on paraquat- and diquat-related illnesses were analyzed, 2011 was the most recent year with complete data. Although the magnitude of acute paraquat- and/or diquat-related illnesses reported to CDC by state agencies was relatively low (300 paraquat- and 144 diquat-related acute illnesses were identified), 29 fatalities were identified. Nineteen paraquat-related deaths were due to ingestion, seven of which were unintentional, often due to improper storage in beverage bottles. Soon after this report was published, the U.S. Environmental Protection Agency (EPA), the federal agency responsible for regulating pesticides (7USC§136), announced interim risk mitigation actions to address the root causes for paraquat-related acute illnesses identified by CDC, which were finalized in December 2016 (*12*). These actions include requiring stronger warnings on paraquat product labels, developing improved training courses that must be taken by all paraquat applicators, and re-engineering all paraquat containers to use closed system technology when mixing and loading paraquat (closed systems are devices designed to prohibit the

escape of the pesticide outside the system, thereby preventing exposure to a handler).

CDC acute pesticide-related illness and injury surveillance data identified a family that was poisoned by sulfuryl fluoride, a highly toxic pesticide (*10*). In August 2015, a family of five in Florida was exposed to sulfuryl fluoride after their house was fumigated to eradicate termites.* All family members had minor symptoms, except a son aged 9 years who was hospitalized for 39 days for basal ganglia injury. Several violations were committed by the pest control company responsible for the fumigation, including failure to have functioning measuring devices to ensure that sulfuryl fluoride concentrations had declined to safe levels before allowing the family to return home.

Illnesses related to exposure to dimethyl disulfide (DMDS) that occurred in 2014 have been described (*11*). DMDS is a relatively new soil fumigant that is considered a replacement for methyl bromide. Methyl bromide is being phased out because it is depleting the stratospheric ozone layer (*13*). Compared with DMDS, methyl bromide is also more acutely toxic to human health and has the potential to produce severe illness and death (*11*,*14*). In 2014, a total of 43 cases of DMDS-related illness were identified in Florida, (87%) of which were classified as having low severity illness (i.e., illnesses that usually resolve quickly without treatment) and 12% were classified as having moderate severity (i.e., illnesses that require medical treatment but are not life-threatening and result in <6 days lost from work or normal activities) (*15*). All of the DMDS-related cases were nonoccupational, and involved exposure to off-target drift of DMDS that had been applied to neighboring strawberry farms. DMDS has a sulfurous odor similar to that of garlic and decaying fish, and the odor can be detected at concentrations thought to be nontoxic. Some reported symptoms (e.g., headache and nausea) might have resulted from aversion to the odor. Improved methods of preventing off-target movement of DMDS to neighboring communities are needed. Additional mitigation when DMDS applications are planned is to notify nearby community members about the upcoming application and provide them with advice on appropriate actions to be taken if they detect DMDS odor (*16*).

* In home fumigations, the home to be fumigated usually is covered with a tarp or tent and sealed completely before releasing the sulfuryl fluoride gas. Chloropicrin, which has a strong odor and is highly irritating, is added to the odorless sulfuryl fluoride gas fumigant as a "warning agent" that encourages persons to vacate an area before being exposed to a lethal dose of the sulfuryl fluoride fumigant. Pesticide applicators post warning signs around the building notifying persons to keep out. After the house is fumigated for a set period of time (range: 2–72 hours), the tarp is removed and the structure is aerated by the use of fans. Pest control operators are required to measure the level of sulfuryl fluoride remaining in the living space to ensure that it is below the EPA-approved concentration before occupants are allowed to reenter.

The root causes identified in at least two of the CDC reports (*9*,*10*) are addressed by new rules finalized and announced by EPA in December 2016. These rules are intended to improve the training and certification of pesticide applicators to ensure competence when using the riskiest pesticides (i.e. "restricted use" pesticides that can be purchased only by trained and certified pesticide applicators) (*17*). This is the first major revision to these rules in approximately 40 years. The proposed new rules will provide health benefits to pesticide applicators, agricultural workers, and the public by reducing the likelihood of misapplication of the riskiest pesticides and the health harms that result from such misapplications. CDC surveillance data for acute pesticide-related illnesses are extensively cited in the EPA rule as justification for the revisions and provide crucial evidence showing that the benefits of the revised rule outweigh the costs. Additional information about these reports and about acute pesticide-related illness and injury is available at https://www.cdc.gov/niosh/topics/pesticides/overview.html.

Future Plans for Publication of Reports on Notifiable Noninfectious Conditions and Disease Outbreaks

To improve the usability, availability, quality, and timeliness of surveillance data (*18*), as part of the CDC Surveillance Strategy, CDC will provide users a convenient way to access notifiable noninfectious disease reports through the NNDSS website beginning in November 2017.

CDC has redesigned the data and statistics section of the NNDSS website to be a one-stop-shop for users to find both detailed information about notifiable noninfectious disease data and the surveillance reports themselves. Although data will no longer be published as the *MMWR Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, users may easily access disease-specific information through the NNDSS website. To ease the transition, *MMWR* also will link users from its website to the new location on the NNDSS website.

Beginning in November 2017, the introductory information in the front of the *MMWR Summary* report (Preface and Background) and links to surveillance reports about NNDSS data that are published by CDC programs will be available on the NNDSS Data and Statistics page at https://wwwn.cdc.gov/nndss/data-and-statistics.html and hosted on the CDC Wide-ranging Online Data for Epidemiologic Research (WONDER) platform.

Consolidating links to the notifiable noninfectious disease data on the NNDSS website is part of the NNDSS Modernization Initiative (NMI) strategy to streamline NNDSS

and access to data for users; NMI is a component of the CDC Surveillance Strategy. This consolidation of information also is in response to the recommendations of a CDC-wide workgroup (comprising representatives from the CDC Excellence in Science Committee, the Surveillance Science Advisory Group, and *MMWR* for CDC) to make more data available online and to allow to focus on publishing scientific and actionable surveillance reports and not routine data tables).

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ISSN: 0149-2195 (Print)