

Trends in U.S. Emergency Department Visits Related to Suspected or Confirmed Child Abuse and Neglect Among Children and Adolescents Aged <18 Years Before and During the COVID-19 Pandemic — United States, January 2019–September 2020

Elizabeth Swedo, MD¹; Nimi Idaikkadar, MPH²; Ruth Leemis, MPH³; Taylor Dias, MPH^{4,5}; Lakshmi Radhakrishnan, MPH⁴; Zachary Stein, MPH^{4,6}; May Chen, PhD³; Nickolas Agathis, MD^{1,7}; Kristin Holland, PhD⁸

Heightened stress, school closures, loss of income, and social isolation resulting from the coronavirus disease 2019 (COVID-19) pandemic have increased the risk for child abuse and neglect (1). Using National Syndromic Surveillance Program (NSSP) data from January 6, 2019–September 6, 2020, CDC tabulated weekly numbers of emergency department (ED) visits related to child abuse and neglect and calculated the proportions of such visits per 100,000 ED visits, as well as the percentage of suspected or confirmed ED visits related to child abuse and neglect ending in hospitalization, overall and stratified by age group (0–4, 5–11, and 12–17 years). The total number of ED visits related to child abuse and neglect began decreasing below the corresponding 2019 period during week 11 (March 15–March 22, 2020) for all age groups examined, coinciding with the declaration of a national emergency on March 13 (2); simultaneously, the proportion of these visits per 100,000 ED visits began increasing above the 2019 baseline for all age groups. Despite decreases in the weekly number of ED visits related to child abuse and neglect, the weekly number of these visits resulting in hospitalization remained stable in 2020; however, the yearly percentage of ED visits related to child abuse and neglect resulting in hospitalization increased significantly among all age groups. Although the increased proportion of ED visits related to child abuse and neglect might be associated with a decrease in the overall number of ED visits, these findings also suggest that health care-seeking patterns have shifted during the pandemic. Hospitalizations for child abuse and neglect did not decrease in 2020, suggesting that injury severity did not decrease during the pandemic, despite decreased ED visits. Child abuse is preventable; implementation of strategies

including strengthening household economic supports and creating family-friendly work policies can reduce stress during

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difficult times and increase children's opportunities to thrive in safe, stable, and nurturing relationships and environments (3).

Despite known risk for child abuse and neglect during pandemics (4) and preliminary reports of increased severity of child abuse and neglect in some facilities (5), official reports to child protection agencies have declined across the United States by 20%–70%, attributed to decreased in-person contact between children and mandated reporters (e.g., teachers, social workers, and physicians) (6). Lack of timely data on child abuse and neglect in the context of COVID-19 highlights the value of near real-time data from NSSP, which provide the opportunity to examine trends in ED visits and hospitalizations for suspected or confirmed child abuse and neglect before and during the COVID-19 pandemic.

Data for U.S. ED visits among children and adolescents aged <18 years were obtained from NSSP's BioSense Platform using a query for suspected and confirmed ED visits related to child abuse and neglect developed by NSSP, CDC's Division of Violence Prevention, and local and state health departments (7). NSSP is a collaboration among CDC, federal partners, local and state health departments, and academic and private sector partners to support the collection and analysis of electronic health data from EDs, urgent and ambulatory care centers, inpatient health care facilities, and laboratories. As of March 31, 2020, a total of 3,310 EDs in 47 states and the District of Columbia contributed data to the platform daily, providing information on approximately 73% of all ED visits in the United States. Visits were included if the ED provider or facility documented suspected or confirmed physical, sexual, or emotional abuse

or physical or emotional neglect of a child or adolescent aged <18 years by a parent or other caregiver (8). To limit the impact of data quality on resulting trends, only visits from facilities that consistently sent informative* discharge diagnoses for ≥70% of cases with ≤20% standard deviation were included; the number of facilities meeting these criteria varied from week to week but averaged 2,970 facilities during the study period (approximately 90% of NSSP's participating EDs).

Data were analyzed to examine national trends in ED visits for suspected or confirmed child abuse and neglect during January 6, 2019–September 6, 2020, the period before and during the U.S. COVID-19 pandemic. Weekly numbers and proportions of visits related to child abuse and neglect per 100,000 ED visits were computed overall and stratified by age group (0–4, 5–11, and 12–17 years). In addition, weekly and annual† percentages of ED visits related to child abuse and neglect resulting in hospitalization were calculated. The change in mean ED visits related to child abuse and neglect per week during the early pandemic period (March 31–April 27, 2020) and the comparison period (March 29–April 25, 2019) was calculated as the mean difference in total ED visits related to child abuse and neglect between the two 4-week periods. Statistically significant differences in annual percentages of ED visits related to child abuse and neglect ending in hospitalizations

* Discharge diagnoses were not null or did not simply include terms like "unknown."

† Complete year for 2019 compared with partial year for 2020.

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were assessed using t-tests. All analyses were performed using R software (version 4.0.2; The R Foundation). This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.[§]

The total number of 2020 ED visits meeting the syndrome definition for child abuse and neglect (Table) began decreasing to below the number of visits that occurred during the corresponding 2019 pre-pandemic period in week 11 (March 15–March 22), coinciding with the president's Proclamation Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak on March 13, 2020 (Figure 1). This pattern was observed for all age groups examined (Supplementary Figure, <https://stacks.cdc.gov/view/cdc/98213>). At the same time, the proportion of ED visits related to child abuse and neglect per 100,000 ED visits began increasing above the proportion seen during the corresponding period in 2019 (Figure 1). ED visits related to child abuse and neglect among children and adolescents aged <18 years reached their nadir during week 13 (March 29–April 4, 2020). During the 4-week period following this early pandemic nadir (March 29–April 25), the number of ED visits related to child abuse and neglect among children and adolescents aged <18 years averaged 53% less than the number that occurred during the corresponding period in 2019 (March 31–April 27) (Figure 1). The number of ED visits related to child abuse and neglect was lower during this period in 2020, compared with visits during the corresponding period in 2019 for every age group, with the largest proportional declines in number of visits by children aged 5–11 years (61%) (Supplementary Figure, <https://stacks.cdc.gov/view/cdc/98213>).

Despite decreases in the total number of ED visits related to child abuse and neglect, the number of these ED visits resulting in hospitalization did not decline in 2020 (Figure 2). As a result of the consistent number of hospitalizations and the decrease in the number of overall ED visits, the percentage of ED visits related to child abuse and neglect ending in hospitalization increased significantly among children and adolescents aged <18 years, from 2.1% in 2019 to 3.2% in 2020 ($p < 0.001$) (Figure 2). Significant increases in the percentage of ED visits related to child abuse and neglect ending in hospitalization were also observed for children aged 0–4 years (3.5% in 2019 versus 5.3% in 2020; $p < 0.001$) and 5–11 years (0.7% in 2019 versus 1.3% in 2020; $p < 0.001$), and adolescents aged 12–17 years (1.6% in 2019 versus 2.2% in 2020; $p = 0.002$) (Supplementary Figure, <https://stacks.cdc.gov/view/cdc/98213>).

[§] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

Discussion

ED visits related to suspected or confirmed child abuse and neglect decreased beginning the week of March 15, 2020, coinciding with the declaration of a national emergency related to COVID-19 and implementation of community mitigation measures (5). The 53% decrease in ED visits related to child abuse and neglect among children aged <18 years in early 2020 compared with the number of visits during early 2019 mirrors trends reported for all ED visits; during weeks 13–16 of 2020, the volume of U.S. ED visits declined by 72% among children aged ≤10 years and 71% among children and adolescents aged 11–14 years compared with ED visits during 2019 (9). Although the total number of ED visits related to child abuse and neglect decreased, the proportion of these visits per 100,000 ED visits increased, suggesting that health care-seeking patterns shifted during the pandemic, with ED visits for other causes declining more than ED visits for child abuse and neglect declined. Despite the ongoing pandemic, caregivers were more likely to take children to EDs for evaluation of complaints related to child abuse and neglect relative to other chief complaints. This pattern might reflect decreased health care-seeking for other medical complaints or a need to seek medical care because of persistence or worsening of child abuse and neglect. The decreased number of ED visits related to child abuse and neglect coincides with decreases in reports of child abuse and neglect to child protective services (4). The consistent number of visits related to child abuse and neglect requiring hospitalization from 2019 to 2020, despite decreased number of ED visits related to child abuse and neglect, suggests that injury severity did not decrease during the pandemic.

The COVID-19 pandemic and the social and economic effects of mitigation measures, such as loss of income, increased stress related to parental child care and schooling responsibilities, and increased substance use and mental health conditions among adults (10), increase the risk for child abuse and neglect. These pandemic-related risk factors might be tied to the observed increased proportions of ED visits related to child abuse and neglect.

The findings in this report are subject to at least six limitations. First, the denominator for proportion estimates declined substantially during the pandemic, making interpretation of temporal proportion trends more difficult. Second, the number of facilities participating in NSSP might change over time, as facilities are added, and, more rarely, as they close. Proportions and counts might be influenced by characteristics of the populations served by participating facilities. Third, the syndrome definition used in this analysis might under- or overestimate facility visits related to suspected or confirmed child abuse and neglect because of jurisdictional or temporal differences in coding, reporting, or availability of chief complaints and discharge diagnoses. To minimize the impact of fluctuating

TABLE. Syndrome definition description and chief complaint search terms, diagnosis codes, and negations included in syndrome definitions for emergency department visits related to suspected and confirmed child abuse and neglect — United States, January 2019–September 2020

Outcome	Description of syndrome definition	Chief complaint search terms*	Diagnosis codes	Negations†
Suspected and confirmed child abuse and neglect	The suspected and confirmed child abuse and neglect (CAN) syndromic surveillance definition uses <i>International Classification of Diseases, Ninth Revision, Clinical Modification</i> (ICD-9-CM) codes <i>International Classification of Diseases, Tenth Revision, Clinical Modification</i> (ICD-10-CM) codes, Systematized Nomenclature of Medicine (SNOMED) codes, and free text terms to detect cases of suspected child abuse and neglect in emergency department and ambulatory health care settings. For the purposes of the CAN syndromic definition, suspected child abuse or neglect visits are categorized as visits related to suspected or confirmed physical, sexual, or emotional abuse; or physical or emotional neglect as perpetrated by parents, caregivers, or an authorized custodian of the child. Acts of violence perpetrated by peers, siblings, or intimate partners are excluded from the CAN definition.	Sexual Abuse Nurse Exam (SANE), [§] non-accidental trauma (NAT), neglect, abuse, Child to Adult Abuse Response Team (CAART), abandon, forensic, [§] molest, Forensic Nurse Exam (FNE), [§] rape, [§] assault, [§] Sexual Assault Forensic Examiner (SAFE), [§] Sexual Abuse Response Team (SART), [§] force sex, [§] suspected sexual, [§] alleged sexual* [§] AND mother, mom, stepmom, grandmom, fostermom, grandma, grandpa, stepdad, fosterdad, granddad, babysitter, nanny, parent, fosterparent, stepparent, grandparent, custodian, guardian, uncle, aunt	T74.02, T74.12, T74.22, T74.32, T74.4, T74.52, T74.62, T74.72, T74.92, T76.02, T76.12, T76.22, T76.32, T76.4, T76.52, T76.62, T76.72, T76.92, Z04.81, Z04.82, Z04.42, [¶] Z04.72, [¶] Y07.1, Y07.4, Y07.5, Y07.6, Y07.9, 995.5, E904.0, E967.1, E967.2, E967.6, E967.7, E967.8, E967.9, V71.5, V71.81, 432464008, 713834002, 777996001, 418189009, 386702006, 242037000, 162596006, 397940009, 702954001, 242037000, 95930005, 397660003, 217635005, 217634009, 217633003, 697951004, 12399131000119105, 473453008, 371775004, 700254002, 95922009, 228143000, 697949003, 12242871000119109, 371779005, 397864009, 237461000119103, 700229002, 720824009, 225824003, 720823003, 225826001, 371776003, 397660003, 777996001, 102458000, 213015009, 419261006, 430139008, 225823009, 361217003, 713821003, 41358001, 23776007, 70167006, 51347003, 213017001, 242046006, 361217003	Y07.0 Y07.4 E967.3 E967.4 E967.5 433960002 Athero Left side or right side Stroke Medical neglect Alcohol Drug Substance Polysubstance Cannabis Weed Hallucinogen THC Marijuana History of abuse Xanax Stimulant Meth Cocaine Tobacco Opioid Inhalant Denies any abuse House Mill Building Motor vehicle Intoxication DUI Crash Molestacion Molestia Molestar Molesta Molesto Molestra Molestio Assaulted by friend Assaulted by boyfriend Assaulted by girlfriend Assaulted by sibling Assaulted by brother Assaulted by sister Assaulted by half brother Assaulted by half sister Assaulted by classmate Denies assault Enforcement Urin No force Sexton Air force Chemo

* To maintain specificity of the query, certain chief complaint terms were included in the search only when paired with parent/caregiver perpetrator terms to exclude potential cases of peer or intimate partner violence.

† Coding very specific negations can be used to negate false positives.

§ These chief complaint terms are only included when paired with a parent/caregiver perpetrator term, such as mother, mom, stepmom, grandmom, fostermom, grandma, grandpa, stepdad, fosterdad, granddad, babysitter, nanny, parent, fosterparent, stepparent, grandparent, custodian, guardian, uncle, aunt.

¶ ICD-10-CM codes Z04.42 (“Suspected child sexual abuse, ruled out”) and Z04.72 (“Suspected physical abuse, ruled out”) were included in the CAN query because, during query validation, this code was found to be inconsistently applied to both identify and rule out cases.

FIGURE 1. Number (A) and proportion (B) of emergency department (ED) visits related to suspected and confirmed child abuse and neglect among children and adolescents aged <18 years, by week — National Syndromic Surveillance Program, United States, 2019–2020

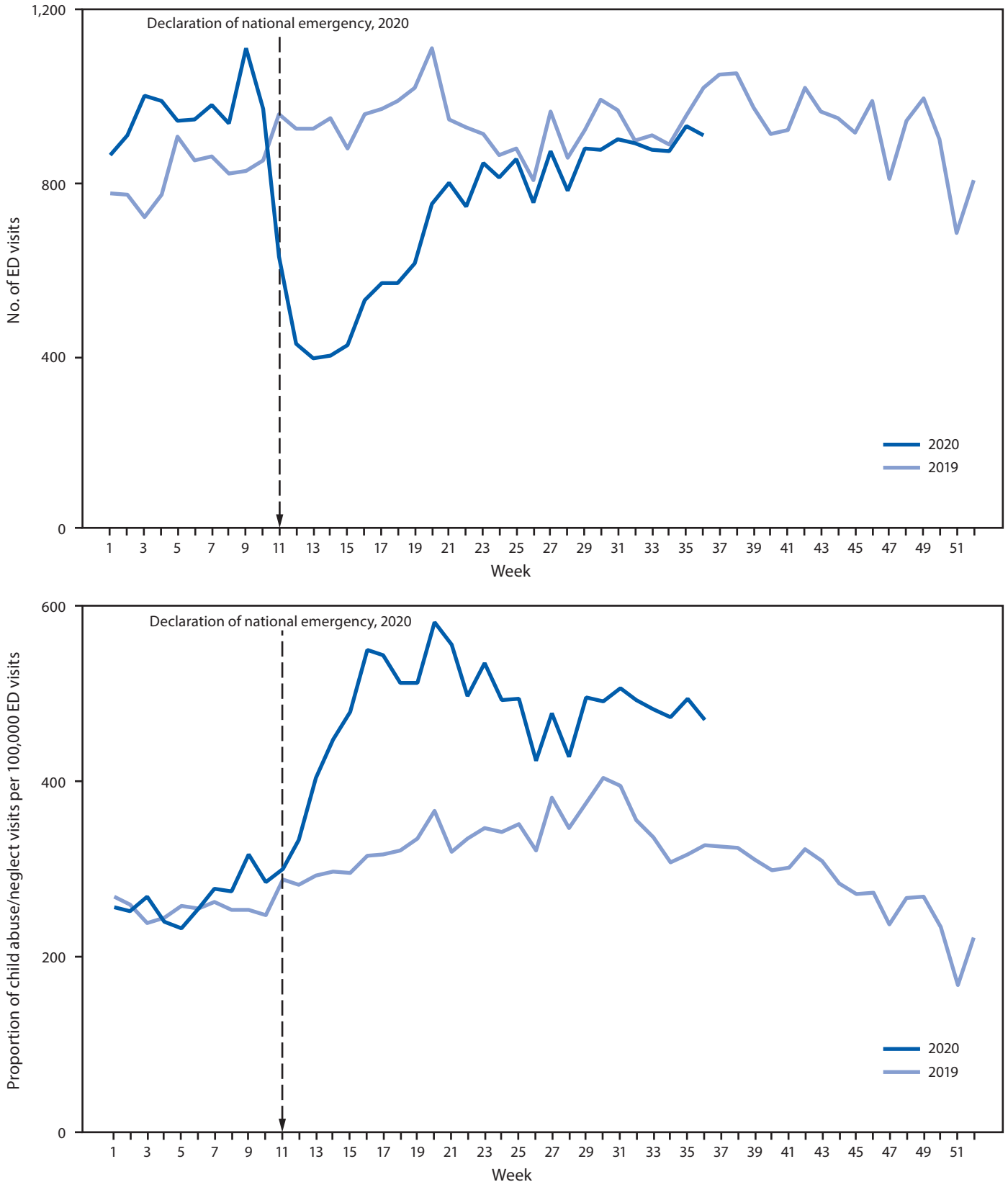
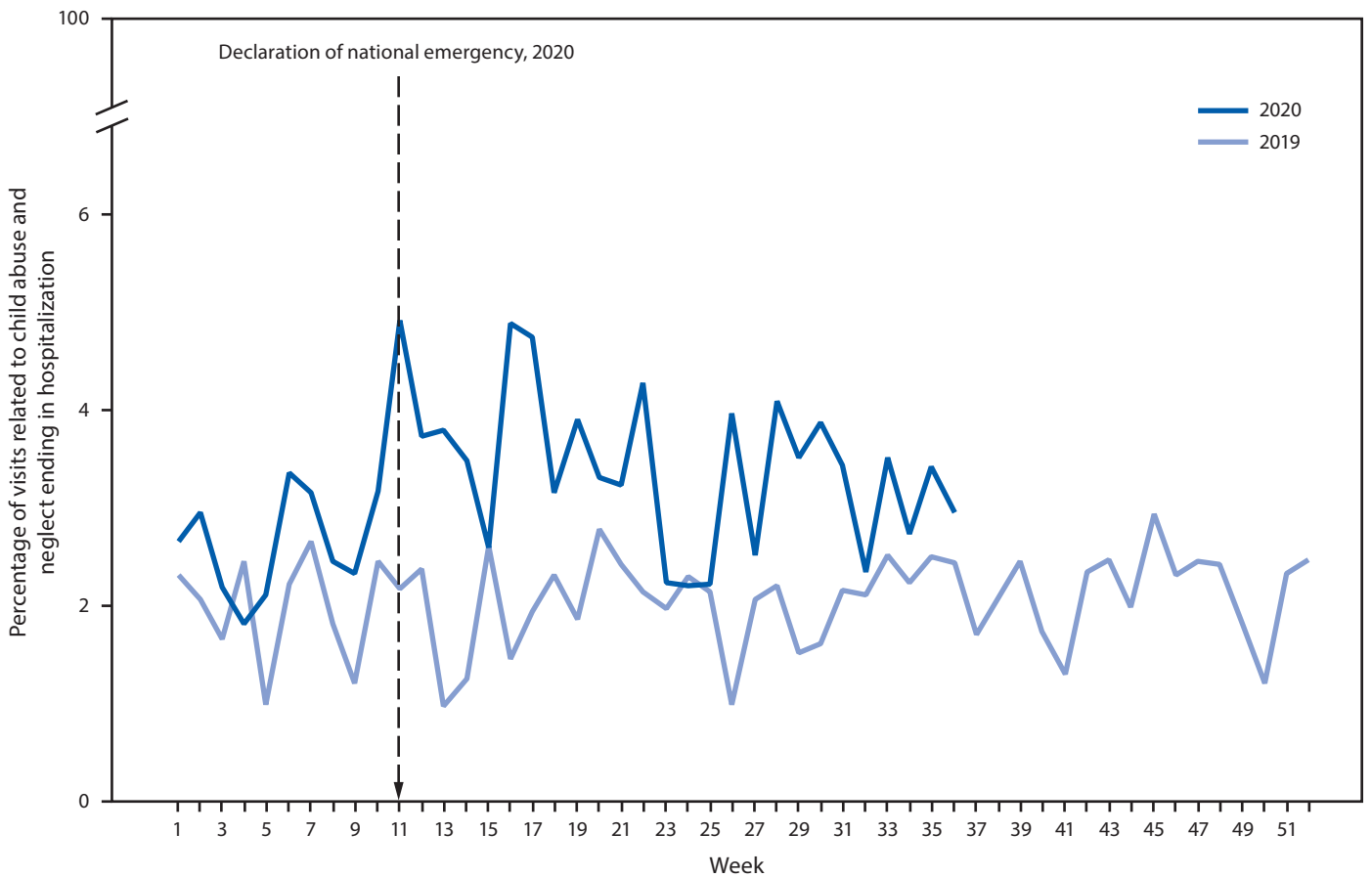
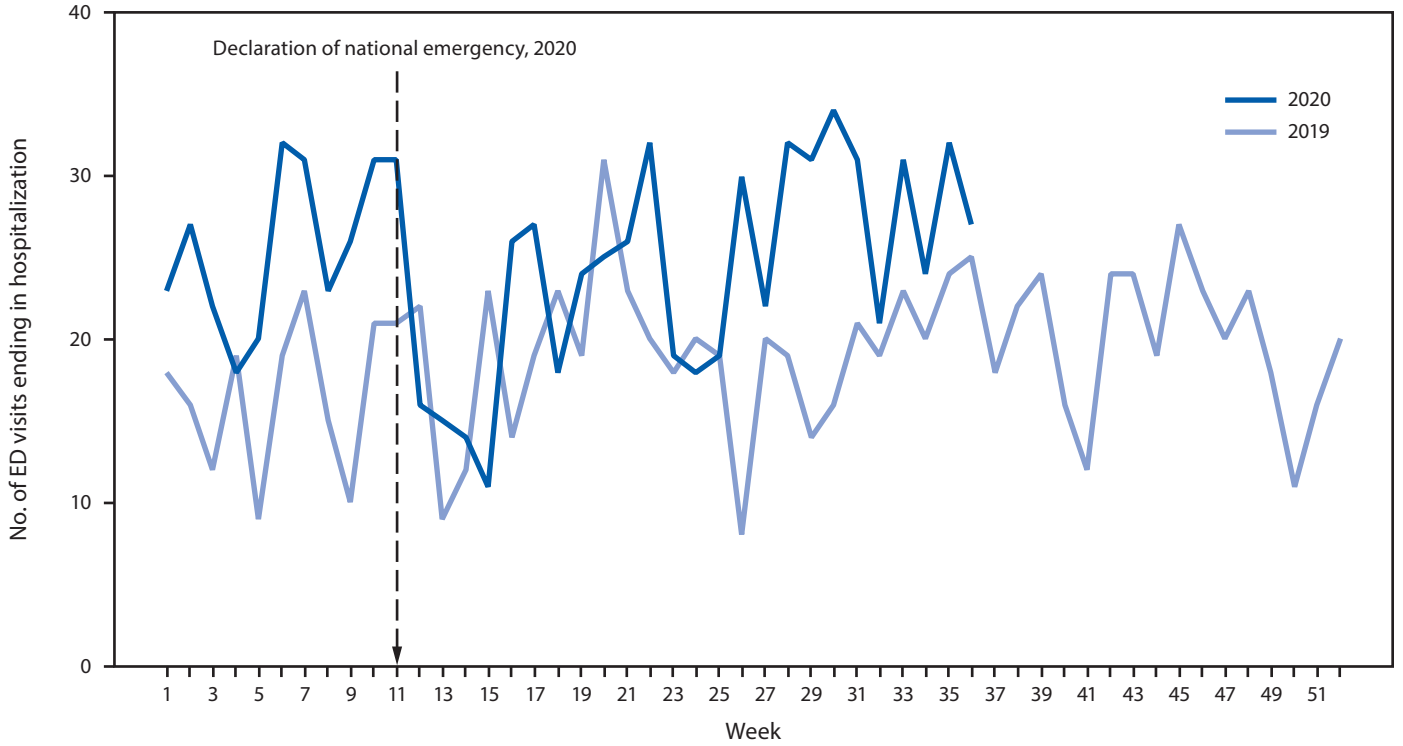


FIGURE 2. Number (A) and percentage (B) of emergency department (ED) visits related to suspected and confirmed child abuse and neglect ending in hospitalization among children and adolescents aged <18 years, by week — National Syndromic Surveillance Program, United States, 2019–2020



Summary**What is already known about this topic?**

Public health emergencies increase risk for child abuse and neglect because of increased stressors and loss of financial and social supports.

What is added by this report?

During the COVID-19 pandemic, the total number of emergency department visits related to child abuse and neglect decreased, but the percentage of such visits resulting in hospitalization increased, compared with 2019.

What are the implications for public health practice?

The pandemic has affected health care-seeking patterns for child abuse and neglect, raising concerns that victims might not have received care and that severity of injuries remained stable or worsened. Implementation of strategies to prevent child abuse and neglect is important, particularly during public health emergencies.

data quality, only data from the most consistently reporting facilities were used. Fourth, NSSP data are not nationally or regionally representative, and results are not generalizable to nonparticipating facilities. Fifth, the data source does not distinguish between incident and recurrent health care facility visits; thus, interpretation of results is limited to ED visits, not patients. Finally, data were transmitted to NSSP in near real-time and are not considered final; results might change over time as additional data are added.

Continued surveillance of child abuse and neglect during the pandemic is warranted, and syndromic surveillance data enable the monitoring of these outcomes in near real-time. Importantly, this report demonstrates that ED visits related to abuse and neglect declined during the COVID-19 pandemic, despite evidence that pandemics increase risk for child abuse and neglect (1). Identification and support of alternative means to detect and report child abuse and neglect is needed during the COVID-19 pandemic. Because of the numerous negative consequences of child abuse and neglect on children's short-term and long-term physical and mental health (6), further research into the epidemiology of child abuse and neglect during the COVID-19 pandemic (e.g., risk factors and protective factors, types of abuse observed, types of injuries sustained, and reasons for hospitalization) is needed to better understand the pandemic's effects on child abuse and neglect.

Child abuse and neglect is preventable. CDC's technical package for preventing child abuse and neglect outlines prevention strategies based on the best available evidence, some of which might be particularly useful during public health emergencies (6). These prevention opportunities include strengthening families' economic supports, ensuring family-friendly work policies so that parents can continue to work while balancing childcare responsibilities, and modifying early home visitation practices to be virtual while social distancing measures are in effect. Broad implementation of prevention strategies can reduce child abuse and neglect and

help ensure that children and adolescents experience safe, stable, nurturing relationships and environments (6).

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Corresponding author: Elizabeth Swedo, eswedo@cdc.gov.

¹Community Interventions and Critical Populations Task Force, CDC COVID-19 Response Team; ²Division of Injury Prevention, National Center for Injury Prevention and Control, CDC; ³Division of Violence Prevention, National Center for Injury Prevention and Control, CDC; ⁴Division of Health Informatics and Surveillance, Center for Surveillance, Epidemiology, and Laboratory Services, CDC; ⁵Deloitte, New York, New York; ⁶ICF, Atlanta, Georgia; ⁷Epidemic Intelligence Service, CDC; ⁸Division of Overdose Prevention, National Center for Injury Prevention and Control, CDC.

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Racial and Ethnic Differences in Parental Attitudes and Concerns About School Reopening During the COVID-19 Pandemic — United States, July 2020

Leah K. Gilbert, MD¹; Tara W. Strine, PhD¹; Leigh E. Szucs, PhD¹; Tamara N. Crawford, DBH¹; Sharyn E. Parks, PhD¹; Danielle T. Barradas, PhD¹; Rashid Njai, PhD¹; Jean Y. Ko, PhD¹

In light of the disproportionate risk of hospitalization and death attributable to coronavirus disease 2019 (COVID-19) among racial and ethnic minority groups, parental attitudes and concerns regarding school reopening were assessed by race and ethnicity using data from three online CARAVAN omnibus surveys conducted during July 8–12, 2020, by ENGINE Insights.* Survey participants included 858 parents who had children and adolescents in kindergarten through grade 12 (school-aged children) living in their household. Overall, 56.5% of parents strongly or somewhat agreed that school should reopen this fall, with some differences by race/ethnicity: compared with 62.3% of non-Hispanic White (White) parents, 46.0% of non-Hispanic Black or African American (Black) parents ($p = 0.007$) and 50.2% of Hispanic parents ($p = 0.014$) agreed that school should reopen this fall. Fewer White parents (62.5%) than Hispanic (79.5%, $p = 0.026$) and non-Hispanic parents of other racial/ethnic groups (66.9%, $p = 0.041$) were supportive of a mask mandate for students and staff members. Understanding parental attitudes and concerns is critical to informing communication and messaging around COVID-19 mitigation. Families' concerns also highlight the need for flexible education plans and equitable resource provision so that youth education is not compromised.

Sustained physical proximity and high contact between children and adolescents attending school might increase risk for infection and community and intrahousehold spread of COVID-19, which is associated with worse outcomes for racial and ethnic minority groups (1–3). Compared with White persons, non-Hispanic American Indian or Alaska Native, Black, non-Hispanic Asian (Asian), and Hispanic persons experience higher COVID-19 incidence, related hospitalizations, and death.† As an important component of community infrastructure, in addition to education, schools provide critical services that help mitigate health disparities, including school meal programs and social, physical, behavioral, and mental health services. COVID-19–related school closures disrupt the delivery of critical services to school-aged children and families and might exacerbate the inequalities faced by racial and ethnic minority families (4–6). To inform communication and behavior change strategies aimed at COVID-19 mitigation in

school settings and to help school districts respond to families' needs, parental attitudes and concerns about school reopening during the COVID-19 pandemic were assessed.

Data from three online CARAVAN omnibus national surveys conducted among U.S. adults aged ≥ 18 years during July 8–12 by ENGINE Insights were analyzed. Each survey included approximately 1,000 adults. Quota sampling was conducted by ENGINE Insights to select respondents, and statistical weighting was used during analysis to match the 2019 edition of the Current Population Survey proportions, so the sample represented the U.S. population by sex, age, region, race/ethnicity, and education.§ Participants came from the Lucid Marketplace (<https://luc.id/quality/>) and could opt-in to supplier panels. Incentives were typically offered as points, which could be redeemed for gift cards or prizes. Respondents were eligible if they had not participated in the previous 20 survey administration waves. Respondents were informed that their answers were being used for market research and that they could refuse to answer any question. Data quality filters in the survey prevent multiple responses from the same person or household and improve response completeness. The survey was only administered in English. This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.¶

Among 3,010 respondents, 858 (29%) parents with school-aged children living in the household were included in the analysis. All 858 parents responded to the questions analyzed in this report. Parents were asked about their attitudes and concerns regarding school reopening. Weighted response percentages, p -values, and 95% confidence intervals were calculated, overall and by race/ethnicity. Unadjusted weighted logistic regression was used to test for differences in responses between racial/ethnic groups; differences were considered statistically significant if p -values were ≤ 0.05 . SAS (version 9.4; SAS Institute) was used for all analyses.

Among 858 parent respondents with school-aged children living in the household, 51.1% were women; 55.6% were White, 13.2% were Black, 24.4% were Hispanic, and 6.7% were non-Hispanic, other race (including American Indian or Alaska Native [1%], Asian [4.0%], multiracial [0.9%], and

* <https://engine-insights.com/product/caravan/>.

† <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>.

§ <https://www.census.gov/programs-surveys/cps.html>.

¶ 45 C.F.R. part 46; 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d), 5 U.S.C. Sect. 552a, 44 U.S.C. Sect. 3501 et seq.

other [0.9%]) (Table 1). Approximately one half of respondents (50.2%) had children in kindergarten through grade 4; 46.1% had children in grades 5–8, and 35.6% had children in grades 9–12. Overall, 248 (29%) respondents selected more than one category for children's school grade; however, some respondents might have had more than one child in the same grade range. Thus, the total number of respondents with more than one child is not known. In terms of education, 38.0% of parent respondents held less than a high school education, 20.4% had some college or technical school education, and 41.6% held a bachelor's degree or higher. When looking at household region, 41.1% of parent respondents lived in the South, 23.6% in the West, 19.9% in the Midwest, and 15.4% in the Northeast.

Compared with White parents, 62.3% of whom strongly or somewhat agreed that schools should reopen in-person for all students in the fall, a smaller percentage of Black (46.0%, $p = 0.007$) and Hispanic parents (50.2%, $p = 0.014$) agreed (Table 2). When asked about schooling preferences until a COVID-19 vaccine is available, 82.4% of Hispanic parents strongly or somewhat agreed that they would prefer to home-school their children until a vaccine is available, compared with 69.8% of White parents ($p = 0.006$) and 64.7% of parents of other racial/ethnic groups ($p = 0.012$). Whereas two thirds (67.6%) of White parents agreed that the overall experience of being in school is more important for students, despite ongoing COVID-19 concerns, significantly fewer Hispanic parents (53.9%, $p = 0.005$) and parents of other racial/ethnic groups (53.4%, $p = 0.044$) felt this way. Reported concern about students complying with mitigation was significantly higher among parents of other racial/ethnic groups (96.9%) compared with White parents (85.2%, $p = 0.025$) and Hispanic parents (80.6%, $p = 0.009$). Similarly, a higher percentage of Black parents (91.9%) were concerned about mitigation compliance than were Hispanic parents (80.6%, $p = 0.019$).

The majority of parents (89.4% overall) were concerned about the quality of their children's education being negatively affected by the COVID-19 pandemic, with no statistically significant differences between racial and ethnic groups. Parents of other racial/ethnic groups were more likely to be very or somewhat concerned about schools opening safely in the fall (98.8%) than were White (86.0%, $p = 0.012$) and Hispanic (86.0%, $p = 0.014$) parents. Black parents were also more likely to be very or somewhat concerned about schools reopening safely in the fall (93.5%) compared with White parents (86.0%, $p = 0.049$). No statistically significant racial or ethnic differences were observed in feeling concerned about disruption to daily routines if virtual learning were to become necessary (77.4% overall). Parents of other racial/ethnic groups were more likely to be very or somewhat concerned about

TABLE 1. Characteristics of respondents with school-aged children (kindergarten [K]–grade 12) — ENGINE Insights, United States, 2020

Characteristic	Unweighted no. (weighted %)
Total	858 (100)
Parent's race/ethnicity	
White, non-Hispanic	571 (55.6)
Black, non-Hispanic	88 (13.2)
Hispanic, non-Hispanic	140 (24.4)
Other, non-Hispanic *	59 (6.7)
Parent's sex	
Female	377 (51.1)
Child's grade level†	
K–4	428 (50.2)
5–8	412 (46.1)
9–12	295 (35.6)
Household region‡	
Northeast	153 (15.4)
Midwest	160 (19.9)
South	346 (41.1)
West	199 (23.6)
Education	
Less than high school	225 (38.0)
Some college or technical school	161 (20.4)
Bachelor's degree or higher	472 (41.6)

* Other, non-Hispanic includes participants who identified as American Indians and Alaska Natives, Asians, multiracial persons, and other.

† These totals sum to >100% because some parents had more than one school-aged child living in the household.

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

their child contracting COVID-19 as a result of attending school (95.6%) than were White parents (84.1%, $p = 0.023$) and Hispanic parents (85.5%, $p = 0.047$); Black parents were significantly more likely to be concerned about this (92.6%) than were White parents (84.1%, $p = 0.036$). More Black parents were very or somewhat concerned about their child bringing home COVID-19 from school (92.7%) than were White parents (84.5%, $p = 0.050$).

Overall, 52.7% of parents were very or somewhat comfortable with their children's schools opening at full capacity in the fall (Table 3). Parents of other racial/ethnic groups were less likely to be comfortable with their children's schools opening at full capacity (32.5%) than were White parents (57.1%, $p = 0.001$) and Hispanic parents (53.3%, $p = 0.011$); Black parents (43.0%) were less likely to be comfortable than were White parents (57.1%, $p = 0.022$). Finally, although most parents supported mask mandates, fewer White parents were supportive of a mask mandate for students and staff members (62.5%) than were Hispanic parents (79.5%, $p = 0.026$) and parents of other racial/ethnic groups (66.9%, $p = 0.041$).

TABLE 2. Parental attitudes and concerns about risks and benefits of school reopening during the COVID-19 pandemic and impacts of COVID-19 on student academic and health-related outcomes, by race/ethnicity — ENGINE Insights, United States, 2020

Question and response	Racial/Ethnic group, % (95% CI)				
	Overall*	White, non-Hispanic*	Black, non-Hispanic*	Hispanic or Latino*	Other,† non-Hispanic*
How much do you agree or disagree with the following?					
Schools should reopen for all students in the fall					
Strongly/Somewhat agree	56.5 (52.8–60.3)	62.3 (57.7–66.9)	46.0 (35.0–57.0) [§]	50.2 (41.5–58.8) [§]	52.6 (39.1–66.1)
I would rather homeschool my child until a COVID-19 vaccine is available					
Strongly/Somewhat agree	73.3 (70.0–76.6)	69.8 (65.5–74.2)	75.6 (66.2–85.0)	82.4 (75.8–88.9) [§]	64.7 (51.6–77.8) [¶]
The overall experience of being in school is more important for students, despite ongoing COVID-19 concerns around the country					
Strongly/Somewhat agree	61.8 (58.1–65.5)	67.6 (63.2–72.0)	56.5 (45.4–67.7)	53.9 (45.3–62.5) [§]	53.4 (39.9–67.0) [§]
Even if measures are put in place, I am concerned about students following through and fully complying with social distancing and mask wearing mandates					
Strongly/Somewhat agree	85.7 (83.1–88.4)	85.2 (81.9–88.6)	91.9 (86.6–97.2) [¶]	80.6 (73.6–87.5)	96.9 (92.5–100.0) ^{§,¶}
Thinking about this upcoming school year, how concerned are you about the following?					
The quality of your children's education being negatively impacted by the COVID-19 pandemic					
Very/Somewhat concerned	89.4 (87.1–91.8)	90.9 (88.2–93.7)	89.3 (82.9–95.8)	84.9 (78.8–91.0)	93.4 (87.6–99.2)
School reopening safely in the fall					
Very/Somewhat concerned	87.8 (85.4–90.3)	86.0 (82.7–89.3)	93.5 (88.6–98.3) [§]	86.0 (80.1–91.8)	98.8 (96.3–100.0) ^{§,¶}
The potential disruption to your daily routines if virtual (at-home) learning becomes necessary					
Very/Somewhat concerned	77.4 (74.1–80.6)	78.6 (74.5–82.5)	78.8 (70.0–87.6)	71.8 (63.9–79.6)	84.7 (75.2–94.2)
Your child contracting COVID-19 as a result of attending school					
Very/Somewhat concerned	86.3 (83.7–88.9)	84.1 (80.6–87.6)	92.6 (87.4–97.8) [§]	85.5 (79.4–91.6)	95.6 (90.6–100.0) ^{§,¶}
Your child bringing COVID-19 home as a result of attending school					
Very/Somewhat concerned	86.3 (83.8–88.9)	84.5 (81.0–87.9)	92.7 (87.3–98.2) [§]	86.2 (80.4–92.0)	89.4 (80.9–98.0)

Abbreviations: CI = confidence interval; COVID-19 = coronavirus disease 2019.

* Weighted.

† Other, non-Hispanic includes participants who identified as American Indian/Alaska Native, Asian, multiracial, and other.

§ p≤0.05 compared with White, non-Hispanic.

¶ p≤0.05 compared with Hispanic.

TABLE 3. Parental attitudes and concerns about school reopening strategies and mask mandates, by race/ethnicity — ENGINE Insights, United States, 2020

Questions and responses	Racial/Ethnic group, % (95% CI)				
	Overall*	White, non-Hispanic*	Black, non-Hispanic*	Hispanic or Latino*	Other,† non-Hispanic*
In light of the COVID-19 pandemic, how comfortable would you be with the following:					
Your children's school(s) reopening at full capacity in the fall					
Very comfortable/Somewhat comfortable	52.7 (48.9–56.4)	57.1 (52.4–61.8)	43.0 (32.0–53.9) [§]	53.3 (44.7–61.9)	32.5 (20.1–44.9) ^{§,¶}
Your children's school(s) reopening at 50% capacity in the fall, with the other 50% dedicated to virtual learning					
Very comfortable/Somewhat comfortable	66.2 (62.6–69.8)	67.9 (63.5–72.4)	58.2 (47.1–69.3)	67.1 (59.0–75.2)	64.8 (52.1–77.6)
Your children's school(s) reopening in the fall exclusively with virtual learning					
Very comfortable/Somewhat comfortable	69.7 (66.2–73.2)	69.1 (64.7–73.6)	73.3 (63.7–82.9)	69.8 (61.8–77.9)	66.7 (53.9–79.6)
When school resumes in the fall, do you believe wearing masks/facial coverings should be mandated for everyone (both students and staff)?					
Yes, at all times	68.3 (64.8–71.8)	62.5 (57.9–67.1)	73.1 (63.4–82.7)	79.5 (72.7–86.4) [§]	66.9 (54.2–79.5) [§]

Abbreviations: CI = confidence interval; COVID-19 = coronavirus disease 2019.

* Weighted.

† Other, non-Hispanic includes participants who identified as American Indian/Alaska Native, Asian, multiracial, and other.

§ p≤0.05 compared with White, non-Hispanic.

¶ p≤0.05 compared with Hispanic.

Discussion

Although the majority of parent respondents had concerns about both school reopening for in-person instruction and virtual learning, the perceived risk for SARS-CoV-2 infection and poor health outcomes might account for the differences in parental attitudes and concerns by race and ethnicity (7). Compared with White parents, non-White parents were less likely to feel that schools should reopen for all students and

were more concerned about adherence to mitigation strategies, schools reopening safely, their child contracting COVID-19, and their child bringing home COVID-19.

Existing structural inequalities place racial and ethnic minority groups at increased risk for poor health outcomes, and social determinants of health, such as discrimination, health care access and utilization, occupation, education, income and wealth gaps, and housing, contribute to the disproportionate

Summary**What is already known about this topic?**

Families and school districts face challenges balancing COVID-19 mitigation and school reopening.

What is added by this report?

Among parents of school-aged children who participated in an Internet panel survey, racial and ethnic minority parents were more concerned about some aspects of school reopening, such as compliance with mitigation measures, safety, and their child contracting or bringing home COVID-19, than were non-Hispanic White parents.

What are the implications for public health practice?

Understanding racial/ethnic differences in parental attitudes and concerns about school reopening can inform communication and mitigation strategies and highlights the importance of considering risks for severe COVID-19 and family resource needs when developing options for school attendance during the COVID-19 pandemic.

rates of COVID-19 incidence morbidity and associated hospitalization and mortality rates.** Further, socioeconomically disadvantaged families, including those in racial and ethnic minority populations, and those residing in rural areas, might have fewer resources available to support remote learning, including high-speed Internet access, computers, and job flexibility (7,8). In addition, family structure (e.g., number of siblings or other relatives in the household) and the ability to find alternative sources of child care might influence parental attitudes and concerns. However, the fear of poor health outcomes from COVID-19 might outweigh these obstacles as families make choices about in-person or virtual learning.

The current school year is well underway; however, these findings remain relevant as the pandemic evolves and families and school districts continue to weigh the risks and benefits of in-person versus virtual instruction. School districts should be cognizant of medical risks for severe COVID-19 and resource limitations among families while also considering their own resources to successfully implement mitigation strategies and provide flexibility in their approach to schooling.

Community mitigation efforts can only succeed if they are supported by the community. A smaller percentage of White parents were supportive of mask mandates than were Hispanic parents and parents of other racial/ethnic groups; these findings are consistent with earlier studies, which have found lower adherence to mask-wearing recommendations and mandates among White adults (9). Messages about the importance of wearing masks in public spaces or reassurance that following

mitigation measures appropriately can prevent COVID-19 might need to be tailored to different community groups (10).

The findings in this report are subject to at least six limitations. First, data were self-reported; therefore, responses might be subject to social desirability bias. Second, although survey responses were weighted to be nationally representative of U.S. demographics, whether responses among this incentivized, opt-in panel sample are truly representative of attitudes and concerns shared by the broader U.S. population or what biases might have occurred is not known. Third, responses were recorded at a single point in time and might not reflect shifts in parental attitudes and concerns about school opening in light of varying community transmission rates and learning options. Fourth, because some families might have more than one child, these questions might have been difficult to answer if concern varied by the child's age and school environment. Fifth, the sample could be biased because the survey was only administered in English. Finally, because of sample size, this study did not adjust for other factors, such as socioeconomic status, urbanicity, or geographic region, which might also affect parental attitudes and concerns.

As U.S. schools make decisions about in-person or virtual learning, ongoing monitoring of parental concerns about school reopening and virtual learning is critical to ensure that families are getting the support they need. Community mitigation implementation and compliance in the school setting should be maximized to reduce COVID-19 transmission.

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Corresponding author: Leah K. Gilbert; LGilbert@cdc.gov.

¹CDC COVID-19 Response Team.

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COVID-19 Mortality Among American Indian and Alaska Native Persons — 14 States, January–June 2020

Jessica Arrazola, DrPH¹; Matthew M. Masiello¹; Sujata Joshi, MSPH²; Adrian E. Dominguez, MS³; Amy Poel, MPH³; Crisandra M. Wilkie, MPH³; Jonathan M. Bressler, MPH⁴; Joseph McLaughlin, MD⁴; Jennifer Kraszewski, MS⁵; Kenneth K. Komatsu, MPH⁶; Xandy Peterson Pompa, MPH⁶; Megan Jespersen, MPH⁷; Gillian Richardson, MPH⁷; Nicholas Lehnertz, MD⁸; Pamela LeMaster, PhD⁸; Britney Rust, MPH⁹; Alison Keyser Metobo, MPH¹⁰; Brooke Doman, MPH¹¹; David Casey, MA¹²; Jessica Kumar, DO¹²; Alyssa L. Rowell, MA¹²; Tracy K. Miller, PhD¹³; Mike Mannell, MPH¹⁴; Ozair Naqvi, MS¹⁴; Aaron M. Wendelboe, PhD¹⁴; Richard Leman, MD¹⁵; Joshua L. Clayton, PhD¹⁶; Bree Barbeau, MPH¹⁷; Samantha K. Rice, MPH¹⁸; Victoria Warren-Mears, PhD²; Abigail Echo-Hawk, MA³; Andria Apostolou, PhD¹⁹; Michael Landen, MD¹

American Indian/Alaska Native (AI/AN) persons experienced disproportionate mortality during the 2009 influenza A(H1N1) pandemic (1,2). Concerns of a similar trend during the coronavirus disease 2019 (COVID-19) pandemic led to the formation of a workgroup* to assess the prevalence of COVID-19 deaths in the AI/AN population. As of December 2, 2020, CDC has reported 2,689 COVID-19–associated deaths among non-Hispanic AI/AN persons in the United States.† A recent analysis found that the cumulative incidence of laboratory-confirmed COVID-19 cases among AI/AN persons was 3.5 times that among White persons (3). Among 14 participating states, the age-adjusted AI/AN COVID-19 mortality rate (55.8 deaths per 100,000; 95% confidence interval [CI] = 52.5–59.3) was 1.8 (95% CI = 1.7–2.0) times that among White persons (30.3 deaths per 100,000; 95% CI = 29.9–30.7). Although COVID-19 mortality rates increased with age among both AI/AN and White persons, the disparity was largest among those aged 20–49 years. Among persons aged 20–29 years, 30–39 years, and 40–49 years, the COVID-19 mortality rates among AI/AN were 10.5, 11.6, and 8.2 times, respectively, those among White persons. Evidence that AI/AN communities might be at increased risk for COVID-19 illness and death demonstrates the importance of documenting and understanding the reasons for these disparities while developing collaborative approaches with federal, state, municipal, and tribal agencies to minimize the impact of COVID-19 on AI/AN communities. Together, public health partners can plan for medical countermeasures and prevention activities for AI/AN communities.

During July 22–September 3, 2020, data were collected on confirmed COVID-19–associated deaths that occurred during January 1–June 30, 2020, from 14 participating states.‡ These states represent approximately 46.5% of the AI/AN population

in the United States.§ States provided data on confirmed COVID-19 deaths by two race/ethnicity groups (AI/AN and White), sex (men and women), and 10-year age groups. At the request of the participating tribal epidemiology centers and states, White race was chosen as the sole comparator to avoid comparison of AI/AN persons of other races/ethnicities that have experienced similar COVID-19 health disparities. AI/AN race was defined as AI/AN either alone or in any racial/ethnic combination; White race was defined as non-Hispanic White only.** The workgroup, which included epidemiologists and tribal epidemiology subject matter experts, also collected data on underlying health conditions known to increase risk for severe COVID-19–associated illness; however, incomplete data precluded analysis of underlying health conditions. Data for race, ethnicity, and COVID-19 mortality were obtained by the state health departments from multiple sources, including case investigations, death certificates, and laboratory reports. Age-adjusted and age-specific COVID-19 mortality rates were calculated for AI/AN and White populations.†† The AI/AN and White populations for each state were obtained from 2019 postcensal population estimates§§ and used as the denominator for rate calculations. Death rates by race/ethnicity were age-adjusted to the 2000 U.S. standard population; 95% CIs for rates were calculated using the Byar approximation to the Poisson distribution. COVID-19 death rates among AI/AN were compared with those among White persons using rate ratios. The number of deaths among persons aged <20 years was small (<10), and these data were suppressed to avoid possible harm to AI/AN communities if potentially identifiable data were published. This activity was reviewed by the Council of State and Territorial Epidemiologists and was conducted for public health surveillance purposes consistent with applicable federal law.¶¶

* Representatives from 14 state health departments, New York City Department of Health and Mental Hygiene, the Council of State and Territorial Epidemiologists, seven Tribal Epidemiology Centers, the Indian Health Service, and CDC.

† https://www.cdc.gov/nchs/nvss/vsrr/covid19/health_disparities.htm.

‡ The following 14 states were solicited by CSTE to participate in the workgroup and provide data for analysis: Alaska, Arizona, Louisiana, Minnesota, Mississippi, Nebraska, New Mexico, New York, North Dakota, Oklahoma, Oregon, South Dakota, Utah, and Washington.

§ <https://data.census.gov/cedsci/table?q=2019%20acs&tid=ACSDP1Y2019.DP05>.

** AI/AN was defined as AI/AN alone or multiracial and includes non-Hispanic and Hispanic ethnicity. White was defined as non-Hispanic ethnicity with a response of White only and no other race selected.

†† Data were analyzed and confirmed separately by the Urban Indian Health Institute and the Northwest Tribal Epidemiology Center.

§§ <https://www.census.gov/content/census/en/data/datasets/time-series/demo/popest/2010s-state-detail.html>.

¶¶ 45 C.F.R. part 46.102(l)(2).

Participating states reported 1,134 deaths among AI/AN persons and 18,815 deaths among White persons during January 1–June 30, 2020. Men accounted for 621 (55%) AI/AN deaths and 9,775 (52%) deaths in White persons. Overall, AI/AN persons who died from COVID-19 were younger than were White persons: 35.1% of AI/AN COVID-19–associated deaths were among persons aged <60 years, compared with 6.3% of deaths among White persons (Table) (Figure).

The age-adjusted AI/AN COVID-19 mortality rate (55.8 deaths per 100,000) was 1.8 (95% CI = 1.7–2.0) times that among White persons (30.3 deaths per 100,000) (Table). For both AI/AN and White persons, mortality was higher among men (66.4 and 36.1 per 100,000, respectively) than among women (46.8 and 25.4 per 100,000, respectively). Among both AI/AN and White persons, COVID-19 mortality rates increased with age, with the highest age-specific mortality rate among persons aged ≥80 years (488.3 and 520.1 per 100,000, respectively). Mortality rates among AI/AN persons were higher than those among White persons in all age groups except the oldest age group. The largest differences were among persons in the three age groups encompassing 20–49 years. Among persons aged 20–29 years, 30–39 years, and 40–49 years, the COVID-19 mortality rates among AI/AN persons were 10.5, 11.6, and 8.2 times those among White persons, respectively (Table).

Discussion

In the 14 states that participated in this study, the overall COVID-19 mortality rate among AI/AN persons was higher than that among White persons. This finding is consistent with those from a similar study assessing pandemic influenza A(H1N1)–related mortality (1). Long-standing inequities in public funding; infrastructure; and access to health care, education, stable housing, healthy foods, and insurance coverage have contributed to health disparities (including higher prevalences of smoking, obesity, diabetes, and cardiovascular disease) that put indigenous peoples at higher risk for severe COVID-19–associated illness (4). The lack of consistent and complete collection of underlying health conditions prevented the workgroup from assessing the contributions of these conditions to the observed disparity in mortality. This highlights the need for consistent approaches across jurisdictions to collect this information systematically and completely. As with influenza mortality rates, differences in socioeconomic factors might have contributed to elevated COVID-19 mortality (5). Financial or transportation-related barriers to health care access might have prevented patients from receiving timely medical care at the time of initial evaluation, resulting in more severe illness that was less amenable to treatment (2).

TABLE. COVID-19–associated deaths* among American Indian/Alaska Native (AI/AN)[†] and non-Hispanic White (White) persons aged ≥20 years,[§] by demographic characteristics — 14 states,[¶] January–June 2020

Characteristic	AI/AN deaths		White deaths		AI/AN:White rate ratio (95% CI)
	No. (%)**	Rate ^{††} (95% CI)	No. (%) ^{§§}	Rate ^{††} (95% CI)	
Total*	1,134 (100)	55.8 (52.5–59.3)	18,815 (100)	30.3 (29.9–30.7)	1.8 (1.7–2.0)
Sex*					
Men	621 (55)	66.4 (60.9–72.1)	9,775 (52)	36.1 (35.4–36.8)	1.8 (1.7–2.0)
Women	513 (45)	46.8 (42.8–51.1)	9,035 (48)	25.4 (24.9–26.0)	1.8 (1.7–2.0)
Missing	0	—	5	—	—
Age group, yrs^{¶¶}					
20–29	27 (2)	6.3 (4.2–9.2)	31 (0.2)	0.6 (0.4–0.9)	10.5 (6.3–17.6)
30–39	72 (6)	19.8 (15.5–25.0)	91 (0.5)	1.7 (1.4–2.1)	11.6 (8.5–15.8)
40–49	99 (9)	34.0 (27.6–41.3)	199 (1)	4.1 (3.6–4.7)	8.2 (6.5–10.5)
50–59	200 (18)	73.9 (64.1–84.9)	870 (5)	15.6 (14.6–16.7)	4.7 (4.1–5.5)
60–69	268 (24)	127.7 (112.8–143.9)	2,337 (12)	41.6 (39.9–43.3)	3.1 (2.7–3.5)
70–79	235 (21)	218.1 (191.1–247.8)	4,514 (24)	122.2 (118.7–125.9)	1.8 (1.6–2.0)
≥80	230 (20)	488.3 (427.3–555.7)	10,767 (57)	520.1 (510.3–530.0)	0.9 (0.8–1.1)
Missing	3	—	6	—	—

Abbreviations: CI = confidence interval; COVID-19 = coronavirus disease 2019.

* Rates are age-adjusted to the 2000 U.S. standard population.

[†] Includes Hispanic and non-Hispanic AI/AN persons.

[§] Cases in persons aged <20 years suppressed because number was <10.

[¶] Alaska, Arizona, Louisiana, Minnesota, Mississippi, Nebraska, New Mexico, New York, North Dakota, Oklahoma, Oregon, South Dakota, Utah, and Washington.

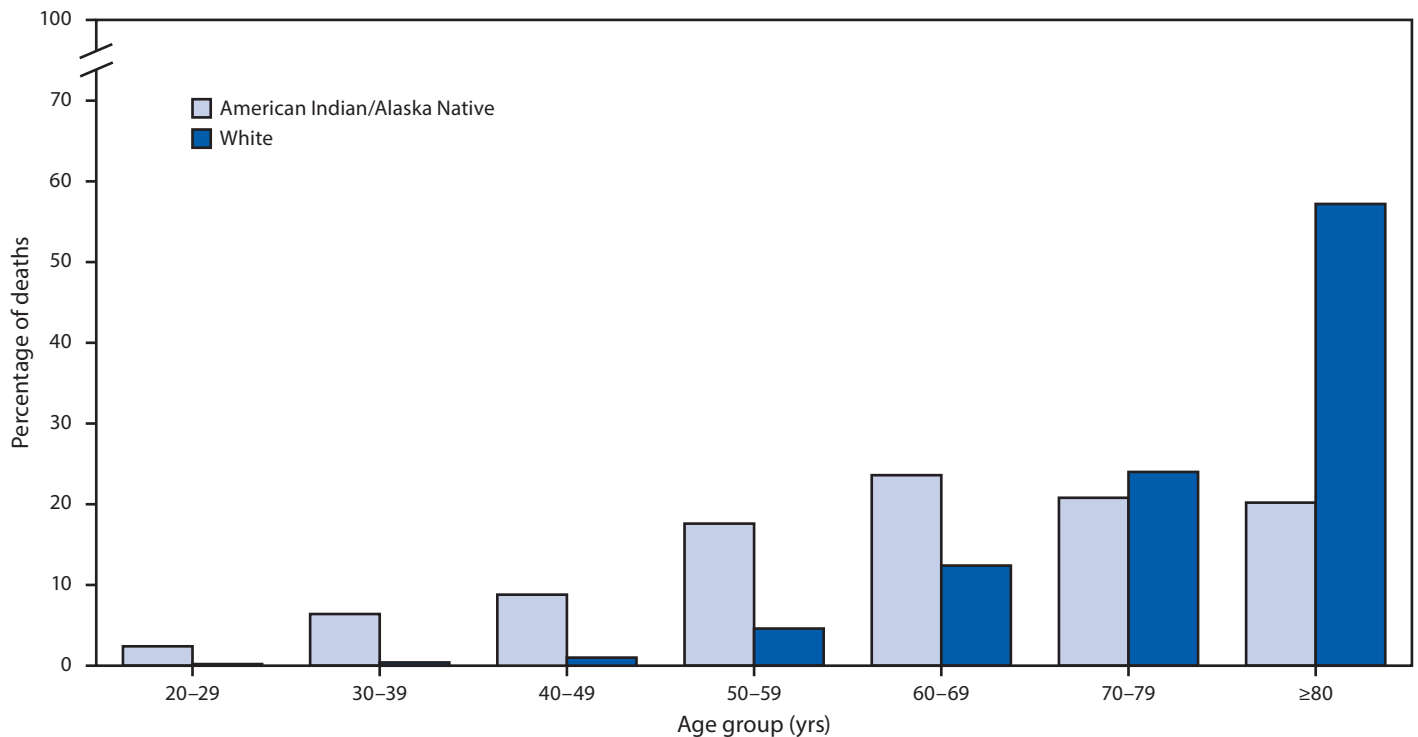
** Includes 12 persons with unknown ethnicity.

^{††} Deaths per 100,000 population.

^{§§} Includes five persons with unknown sex.

^{¶¶} Rates are age-specific.

FIGURE. Percentage distribution of COVID-19–associated deaths among American Indian/Alaska Native* and non-Hispanic White persons aged ≥20 years, by age group† — 14 states,‡ January 1–June 30, 2020



Abbreviation: COVID-19 = coronavirus disease 2019.

* Includes Hispanic and non-Hispanic ethnicities.

† Percentages by age group are not age-adjusted.

‡ Alaska, Arizona, Louisiana, Minnesota, Mississippi, Nebraska, New Mexico, New York, North Dakota, Oklahoma, Oregon, South Dakota, Utah, and Washington.

In 2010, the Advisory Committee on Immunization Practices (ACIP) first recommended that vaccination efforts should focus on delivering influenza vaccine to AI/AN population, among others, when supply is limited, based on the disproportionate impact pandemic influenza A(H1N1) had on AI/AN communities during 2009–2010 (6). The ACIP COVID-19 Vaccines Work Group has developed an ethical framework to guide COVID-19 vaccine allocation decisions when supply is limited (7), which aims to maximize benefits and minimize harms, promote justice, mitigate health inequities, and promote transparency. Compared with White persons, AI/AN persons have experienced higher morbidity and mortality from COVID-19 (3).*** Federal, state, tribal, and local partners should consider the AI/AN disparities from COVID-19 and other underlying factors when developing their vaccine allocations strategies.

The findings in this report are subject to at least six limitations. First, mortality estimates for other persons of color were not assessed, preventing comparisons with these groups.

*** https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1266/2020/06/20_Bassett-Chen-Krieger_COVID-19_plus_age_working-paper_0612_Vol-19_No-3_with-cover.pdf.

Second, deaths caused by COVID-19 were likely underreported because of limited testing availability and reluctance to be tested, particularly in the early months of the pandemic (8). Third, limited completeness and accuracy of race/ethnicity data might lead to undercounting of AI/AN COVID-19–related deaths. AI/AN persons are more likely to be racially misclassified as White or other races in vital records and other data systems, resulting in underestimates of morbidity and mortality in AI/AN communities (9). Fourth, the inconsistent and incomplete collection of data for underlying health conditions precluded an analysis controlling for underlying health conditions as a factor for COVID-19 mortality. Fifth, the analytic methods used did not account for clustering of deaths by state. Finally, this study reports data from selected states and therefore does not represent the entire AI/AN population within the United States.

Despite these limitations, these findings suggest that, compared with the White population, the AI/AN population in the 14 participating states has been disproportionately affected by the COVID-19 pandemic, especially among younger age groups. Improved data quality and completeness for case investigation, death certificates, and laboratory reports can guide

Summary**What is already known about this topic?**

COVID-19 incidence is higher among American Indians/Alaska Natives (AI/ANs) than among non-Hispanic Whites. In 2009, AI/ANs experienced disproportionately high pandemic influenza A(H1N1)–associated mortality.

What is added by this report?

Based on data from 14 participating states, age-adjusted COVID-19–associated mortality among AI/ANs was 1.8 times that among non-Hispanic Whites. Among AI/ANs, mortality was higher among men than among women, and the disparity in mortality compared with non-Hispanic Whites was highest among persons aged 20–49 years.

What are the implications for public health practice?

AI/ANs have experienced disproportionate rates of infection and mortality during the COVID-19 pandemic. The excess risk, especially for AI/AN males and persons aged 20–49 years, should be considered when planning and implementing medical countermeasures and other prevention activities.

decisions on resource prioritization to identify and protect populations at higher risk for illness and death. Public health agencies should engage with tribes through tribal consultations and confer with urban-dwelling AI/AN communities to build upon existing community assets and values to enhance health outcomes. AI/AN communities have formed bidirectional partnerships with public health partners that are rooted in tribal sovereignty and fulfillment of treaty rights to promote culturally sensitive strategies for COVID-19 prevention activities and medical countermeasures (10).^{†††} Strategies can draw on cultural factors that include protecting elders and ensuring a healthy future for younger generations. Improving the quality of COVID-19 data will be important for AI/AN communities and their partners to identify populations experiencing excess risk and plan and implement prevention activities and medical countermeasures.

^{†††} Some authors have been engaged to support the development of data use agreements with tribes, their state public health department, and their Tribal Epidemiology Center to promote timely, culturally responsive case investigation, contact tracing, and wraparound services for members of their communities affected by COVID-19.

Acknowledgments

Council of State and Territorial Epidemiologists American Indian/Alaska Native COVID-19 Mortality Workgroup; CDC COVID-19 Tribal Support Unit.

Corresponding author: Jessica Arrazola, jarrazola@cste.org.

¹Council of State and Territorial Epidemiologists, Atlanta, Georgia; ²Northwest Portland Area Indian Health Board, Portland, Oregon; ³Urban Indian Health Institute, Seattle Washington; ⁴Alaska Department of Health and Social Services; ⁵Albuquerque Area Indian Health Board, Albuquerque, New Mexico; ⁶Arizona Department of Health Services; ⁷Louisiana Department of Health; ⁸Minnesota Department of Health; ⁹Mississippi State Department of Health; ¹⁰Nebraska Department of Health and Human Services; ¹¹New Mexico Department of Health; ¹²New York State Department of Health; ¹³North Dakota Department of Health; ¹⁴Oklahoma State Department of Health; ¹⁵Oregon Health Authority; ¹⁶South Dakota Department of Health; ¹⁷Utah Department of Health; ¹⁸Washington State Department of Health; ¹⁹Indian Health Service, Rockville, Maryland.

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The Advisory Committee on Immunization Practices' Interim Recommendation for Allocating Initial Supplies of COVID-19 Vaccine — United States, 2020

Kathleen Dooling, MD¹; Nancy McClung, PhD¹; Mary Chamberland, MD^{1,2}; Mona Marin, MD¹; Megan Wallace, DrPH^{1,3}; Beth P. Bell, MD⁴; Grace M. Lee, MD⁵; H. Keipp Talbot, MD⁶; José R. Romero, MD⁷; Sara E. Oliver, MD¹

On December 3, 2020, this report was posted as an MMWR Early Release on the MMWR website (<https://www.cdc.gov/mmwr>).

The emergence of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19), has led to a global pandemic that has disrupted all sectors of society. Less than 1 year after the SARS-CoV-2 genome was first sequenced, an application* for Emergency Use Authorization for a candidate vaccine has been filed with the Food and Drug Administration (FDA). However, even if one or more vaccine candidates receive authorization for emergency use, demand for COVID-19 vaccine is expected to exceed supply during the first months of the national vaccination program. The Advisory Committee on Immunization Practices (ACIP) advises CDC on population groups and circumstances for vaccine use.[†] ACIP convened on December 1, 2020, in advance of the completion of FDA's review of the Emergency Use Authorization application, to provide interim guidance to federal, state, and local jurisdictions on allocation of initial doses of COVID-19 vaccine. ACIP recommended that, when a COVID-19 vaccine is authorized by FDA and recommended by ACIP, both 1) health care personnel[§] and 2) residents of long-term care facilities (LTCFs)[¶] be offered vaccination in the initial phase of the COVID-19 vaccination program (Phase 1a**).^{††} In its deliberations, ACIP considered scientific evidence of SARS-CoV-2 epidemiology, vaccination program implementation, and ethical principles.^{§§} The interim recommendation might be updated over the coming weeks based on additional safety and efficacy data from phase III clinical trials and conditions of FDA Emergency Use Authorization.

Evidence-based information addressing COVID-19 vaccine topics including early allocation has been explicitly and transparently reviewed during seven public ACIP meetings (1). To inform policy options for ACIP, the COVID-19 Vaccines Work Group, comprising experts in vaccines and ethics, held more than 25 meetings to review data regarding vaccine candidates, COVID-19 surveillance, and modeling, as well as

the vaccine allocation literature from published and external expert committee reports.

Health care settings in general, and long-term care settings in particular, can be high-risk locations for SARS-CoV-2 exposure and transmission (2–4). Health care personnel are defined as paid and unpaid persons serving in health care settings who have the potential for direct or indirect exposure to patients or infectious materials. As of December 1, 2020, approximately 245,000 COVID-19 cases and 858 COVID-19-associated deaths had been reported among U.S. health care personnel (5). Early protection of health care personnel is critical to preserve capacity to care for patients with COVID-19 or other illnesses. LTCF residents are defined as adults who reside in facilities that provide a range of services, including medical and personal care, to persons who are unable to live independently. LTCF residents, because of their age, high rates of underlying medical conditions, and congregate living situation, are at high risk for infection and severe illness from COVID-19. As of November 15, 2020, approximately 500,000 COVID-19 cases and 70,000 associated deaths had been reported among residents of skilled nursing facilities, a subset of LTCFs serving residents with more complex medical needs (6).

With respect to vaccination program implementation, vaccines that require cold and ultracold storage, specialized handling, and large minimum order requirements are most feasibly maintained in centralized vaccination clinics, such as acute health care settings, or through the federal Pharmacy Partnership for Long-term Care Program.^{¶¶} ACIP's ethical principles for allocating initial supplies of COVID-19 vaccine, namely to maximize benefits and minimize harms, promote justice, and mitigate health inequities (7), support the early vaccination of health care personnel and LTCF residents.

Approximately 21 million U.S. health care personnel work in settings such as hospitals, LTCFs, outpatient clinics, home health care, public health clinical services, emergency medical services, and pharmacies. Health care personnel comprise clinical staff members, including nursing or medical assistants and support staff members (e.g., those who work in food, environmental, and administrative services) (8). Jurisdictions might consider first offering vaccine to health care personnel

^{¶¶} <https://www.cdc.gov/vaccines/covid-19/long-term-care/pharmacy-partnerships.html>.

* <https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-submit-emergency-use-authorization>.

[†] <https://www.cdc.gov/vaccines/acip/committee/acip-charter.pdf>.

[§] <https://www.cdc.gov/infectioncontrol/guidelines/healthcare-personnel/appendix/terminology.html>.

[¶] <https://www.cdc.gov/longtermcare/index.html>.

** <https://www.cdc.gov/vaccines/acip/meetings/slides-2020-11.html>.

^{††} On December 1, 2020, ACIP voted 13-1 in favor of the Phase 1a allocation recommendation.

^{§§} <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19/evidence-table.html>.

Summary**What is already known about this topic?**

Demand is expected to exceed supply during the first months of the national COVID-19 vaccination program.

What is added by this report?

The Advisory Committee on Immunization Practices (ACIP) recommended, as interim guidance, that both 1) health care personnel and 2) residents of long-term care facilities be offered COVID-19 vaccine in the initial phase of the vaccination program.

What are the implications for public health practice?

Federal, state, and local jurisdictions should use this guidance for COVID-19 vaccination program planning and implementation. ACIP will consider vaccine-specific recommendations and additional populations when a Food and Drug Administration-authorized vaccine is available.

whose duties require proximity (within 6 feet) to other persons. If vaccine supply remains constrained, additional factors might be considered for subprioritization.^{***} Public health authorities and health care systems should work together to ensure COVID-19 vaccine access to health care personnel who are not affiliated with hospitals.

Approximately 3 million adults reside in LTCFs, which include skilled nursing facilities, nursing homes, and assisted living facilities. Depending upon the number of initial vaccine doses available, jurisdictions might consider first offering vaccination to residents and health care personnel in skilled nursing facilities because of high medical acuity and COVID-19-associated mortality (6) among residents in these settings.

Monitoring vaccine safety in all populations receiving COVID-19 vaccine is required under an Emergency Use Authorization. Vaccines are being studied in older adults with underlying health conditions; however, LTCF residents have not been specifically studied. ACIP members called for additional active safety monitoring in LTCFs to ensure timely reporting and evaluation of adverse events after immunization. ACIP will consider vaccine-specific recommendations and additional populations for vaccine allocation beyond Phase 1a when an FDA-authorized vaccine is available.

^{***} <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19/clinical-considerations.html>.

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Corresponding author: Kathleen Dooling, vic9@cdc.gov.

¹CDC COVID-19 Response Team; ²General Dynamics Information Technology, Falls Church, Virginia; ³Epidemic Intelligence Service, CDC; ⁴University of Washington, Seattle, Washington; ⁵Stanford University School of Medicine, Stanford, California; ⁶Vanderbilt University School of Medicine, Nashville, Tennessee; ⁷Arkansas Department of Health, Little Rock, Arkansas.

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Summary of Guidance for Public Health Strategies to Address High Levels of Community Transmission of SARS-CoV-2 and Related Deaths, December 2020

Margaret A. Honein, PhD¹; Athalia Christie, MIA¹; Dale A. Rose, PhD¹; John T. Brooks, MD¹; Dana Meaney-Delman, MD¹; Amanda Cohn, MD¹; Erin K. Sauber-Schatz, PhD¹; Allison Walker, PhD¹; L. Clifford McDonald, MD¹; Leandris C. Liburd, PhD¹; Jeffrey E. Hall, PhD¹; Alicia M. Fry, MD¹; Aron J. Hall, DVM¹; Neil Gupta, MD¹; Wendi L. Kuhnert, PhD¹; Paula W. Yoon, ScD¹; Adi V. Gundlapalli, MD, PhD¹; Michael J. Beach, PhD¹; Henry T. Walke, MD¹; CDC COVID-19 Response Team

On December 4, 2020, this report was posted as an MMWR Early Release on the MMWR website (<https://www.cdc.gov/mmwr>).

In the 10 months since the first confirmed case of coronavirus disease 2019 (COVID-19) was reported in the United States on January 20, 2020 (1), approximately 13.8 million cases and 272,525 deaths have been reported in the United States. On October 30, the number of new cases reported in the United States in a single day exceeded 100,000 for the first time, and by December 2 had reached a daily high of 196,227.* With colder weather, more time spent indoors, the ongoing U.S. holiday season, and silent spread of disease, with approximately 50% of transmission from asymptomatic persons (2), the United States has entered a phase of high-level transmission where a multipronged approach to implementing all evidence-based public health strategies at both the individual and community levels is essential. This summary guidance highlights critical evidence-based CDC recommendations and sustainable strategies to reduce COVID-19 transmission. These strategies include 1) universal face mask use, 2) maintaining physical distance from other persons and limiting in-person contacts, 3) avoiding nonessential indoor spaces and crowded outdoor spaces, 4) increasing testing to rapidly identify and isolate infected persons, 5) promptly identifying, quarantining, and testing close contacts of persons with known COVID-19, 6) safeguarding persons most at risk for severe illness or death from infection with SARS-CoV-2, the virus that causes COVID-19, 7) protecting essential workers with provision of adequate personal protective equipment and safe work practices, 8) postponing travel, 9) increasing room air ventilation and enhancing hand hygiene and environmental disinfection, and 10) achieving widespread availability and high community coverage with effective COVID-19 vaccines. In combination, these strategies can reduce SARS-CoV-2 transmission, long-term sequelae or disability, and death, and mitigate the pandemic's economic impact. Consistent implementation of these strategies improves health equity, preserves health care capacity, maintains the function of essential businesses, and supports the availability of in-person instruction for kindergarten through grade 12 schools and preschool. Individual persons, households, and communities should take

these actions now to reduce SARS-CoV-2 transmission from its current high level. These actions will provide a bridge to a future with wide availability and high community coverage of effective vaccines, when safe return to more everyday activities in a range of settings will be possible.

Recommended Public Health Strategies

Universal use of face masks. Consistent and correct use of face masks is a public health strategy critical to reducing respiratory transmission of SARS-CoV-2, particularly in light of estimates that approximately one half of new infections are transmitted by persons who have no symptoms (2,3). Compelling evidence now supports the benefits of cloth face masks for both source control (to protect others) and, to a lesser extent, protection of the wearer.[†] To preserve the supply of N95 respirators for health care workers and other medical first responders, CDC recommends nonvalved, multilayer cloth masks or nonmedical disposable masks for community use.[§] Face mask use is most important in indoor spaces and outdoors when physical distance of ≥ 6 feet cannot be maintained. Within households, face masks should be used when a member of the household is infected or has had recent potential COVID-19 exposure (e.g., known close contact or potential exposure related to occupation, crowded public settings, travel, or nonhousehold members in your house). A community-level plan for distribution of face masks to specific populations, such as those who might experience barriers to access, should be developed (Table).

Physical distancing and limiting contacts. Maintaining physical distance (≥ 6 feet) lowers the risk for SARS-CoV-2 infection through exposure to infectious respiratory droplets and aerosols and is important, even if no symptoms are apparent, because transmission can occur from asymptomatic infected persons[¶] (2,3). Outside the household setting, close physical contact, shared meals, and being in enclosed spaces have all been associated with an increased infection risk (4–7). Although the impact of physical distancing is difficult to disaggregate from other interventions, one study estimated that physical distancing decreased the average number of daily

[†] <https://www.cdc.gov/coronavirus/2019-ncov/more/masking-science-sars-cov2.html>.

[§] <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html>.

[¶] <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>.

* https://covid.cdc.gov/covid-data-tracker/#trends_dailytrendscases.

TABLE. Individual- and community-level public health strategies to reduce SARS-CoV-2 transmission*

Recommended public health strategies	Individual- and household-level strategies	Community-level strategies (at state or local level)	Links to guidance
Universal use of face masks	Consistent and correct use of face masks, including within the household if there is a COVID-19 case or a person with a known or possible exposure in the household	Issue policies or directives mandating universal use of face masks in indoor (nonhousehold) settings Plan for provision of face masks for specific populations if needed	Considerations for wearing masks: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html Caring for someone sick at home, when to wear a mask or gloves: https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/care-for-someone.html#face-covering Protect your home: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/protect-your-home.html
Physical distancing and limiting contacts	Maintain physical distance (≥6 feet) from other persons when possible, and limit number of contacts with persons outside the immediate household	Physical barriers and visual reminders might promote adherence to maintaining physical distance	Social distancing: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html Personal and social activities: https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/personal-social-activities.html
Avoid nonessential indoor spaces and crowded outdoor settings	Avoid nonessential indoor spaces and crowded outdoor settings	Issue policies or directives restricting some nonessential indoor spaces that pose the highest risk for transmission Promoting flexible worksites (e.g., telework); apply limits to occupancy of indoor spaces and to the size of social gatherings	Daily activities and going out: https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/going-out.html Considerations for events and gatherings: https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html
Increased testing, diagnosis, and isolation	Persons with a known exposure to someone with COVID-19, with possible exposure, or who experience symptoms should promptly seek testing; symptomatic or infected persons should isolate promptly; exposed persons should quarantine	Increase access to testing, including expanded screening testing of prioritized persons/groups, prioritizing those with many interactions (or interactions with persons at high risk) based on their occupational or residential setting Promptly report test results to the person tested and to public health authorities	Testing: https://www.cdc.gov/coronavirus/2019-ncov/testing/index.html Expanded screening testing: https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/expanded-screening-testing.html Isolate if you are sick: https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/isolation.html Guidance for health departments about COVID-19 testing in the community: https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/testing.html
Prompt case investigation and contact tracing to identify, quarantine, and test close contacts	Persons with diagnosed COVID-19 should provide names of known contacts; close contacts should anticipate a call from the health department, answer the call, adhere to quarantine, seek testing, and encourage their household members to quarantine	When incidence is high and overwhelms capacity, prioritize case investigation and contact tracing to promptly quarantine and test close contacts, based on time since sample collection and risk for spread to others (e.g., those working in high-density settings)	When to quarantine: https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html Contact tracing (your health): https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/contact-tracing.html Contact tracing (health departments): https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/contact-tracing/index.html Prioritizing case investigation and contact tracing: https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/prioritization.html Quarantine: https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-options-to-reduce-quarantine.html
Safeguarding persons most at risk for severe illness or death	Persons with underlying medical conditions or risk factors that place them at increased risk for severe illness or death should minimize contact with nonhousehold members and nonessential indoor spaces	Protect persons most at risk for severe illness or death through 1) identifying populations at high risk in the community and 2) expanding access to testing, provision of support services, and messaging	People at increased risk: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html

See table footnotes on the next page.

TABLE. (Continued) Individual- and community-level public health strategies to reduce SARS-CoV-2 transmission*

Recommended public health strategies	Individual- and household-level strategies	Community-level strategies (at state or local level)	Links to guidance
Protecting essential workers	Essential workers should employ all available public health strategies to reduce their risk (e.g., wear face masks and keep physical distance)	Protect essential workers through policies directing administrative and structural prevention as well as expanded testing	Essential services and critical infrastructure: https://www.cdc.gov/coronavirus/2019-ncov/community/workplaces-businesses/essential-services.html COVID-19 critical infrastructure sector response planning: https://www.cdc.gov/coronavirus/2019-ncov/community/critical-infrastructure-sectors.html CISA guidance on the essential critical infrastructure workforce: https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce
Postponing travel	Travel should be postponed. Those who choose to travel internationally should be tested with a viral test 1–3 days before departure and retested 3–5 days after arrival; domestic travelers should also consider getting tested Travelers should stay home or reduce nonessential activities before and after travel and be diligent about mask wearing, physical distancing, hand hygiene, and symptom monitoring	Issue policies or directives mandating universal use of face masks on all modes of public transportation	Travel: https://www.cdc.gov/coronavirus/2019-ncov/travelers/index.html When not to travel: https://www.cdc.gov/coronavirus/2019-ncov/travelers/when-to-delay-travel.html Wear face masks on public transportation conveyances and at transportation hubs: https://www.cdc.gov/coronavirus/2019-ncov/travelers/face-masks-public-transportation.html Mask and travel guidance: https://www.cdc.gov/quarantine/masks/mask-travel-guidance.html Domestic travel: https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html Testing and international air travel: https://www.cdc.gov/coronavirus/2019-ncov/travelers/testing-air-travel.html
Increased room air ventilation, enhanced hand hygiene, and cleaning and disinfection	Increase room air ventilation Frequent handwashing	Enhance ventilation and cleaning and disinfection, particularly of essential indoor spaces Ensure provision of adequate hand sanitation supplies	SARS-CoV-2 and potential airborne transmission: https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-sars-cov-2.html Ventilation: https://www.cdc.gov/coronavirus/2019-ncov/community/general-business-faq.html#Ventilation When and how to wash your hands: https://www.cdc.gov/handwashing/when-how-handwashing.html Cleaning and disinfecting: https://www.cdc.gov/coronavirus/2019-ncov/community/clean-disinfect/index.html
Widespread availability and coverage with effective vaccines	Seek vaccine when appropriate following ACIP recommendations Continue to follow all mitigation measures until community vaccination coverage is adequate	Plan for distribution and administration of vaccines to achieve high community coverage Communicate that mitigation measures still need to be followed until community vaccination coverage is determined to be adequate	Vaccines: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html Vaccination planning: https://www.cdc.gov/vaccines/covid-19/planning/index.html

Abbreviations: ACIP = Advisory Committee on Immunization Practices; COVID-19 = coronavirus disease 2019.

* <https://www.cdc.gov/coronavirus/2019-ncov/communication/guidance-list.html>.

contacts by as much as 74% and reduced the reproductive number (R_0 , a measure of transmission, which describes the average number of persons infected by one infectious person) to <1 (8). Because the highest risk for transmission has been documented among household contacts of COVID-19 patients (9), keeping the household safe requires physical distancing, using the other public health strategies summarized here, and, in particular, consistent and correct use of face masks (outside the household and in some circumstances within the household) to prevent introduction and transmission of SARS-CoV-2. At the community level, physical barriers and visual reminders might promote adherence to maintaining physical distance.

Avoiding nonessential indoor spaces and crowded outdoor settings. Exposures at nonessential indoor settings and crowded outdoor settings pose a preventable risk to all participants.^{**},^{††} Indoor venues, where distancing is not maintained and consistent use of face masks is not possible (e.g., restaurant dining), have been identified as particularly high-risk scenarios (7,10). Crowded events in outdoor settings have also been linked to spread of SARS-CoV-2, although it can be difficult to isolate the impact of crowded outdoor events from related indoor social interactions (11). To reduce risk, some restaurants are providing take-away service and well-ventilated open-air dining, and in many cases, exercise or physical activity (individual or group) can be moved to outdoor settings where physical distance is maintained and face masks are worn. Community-level policies can further reduce transmission by promoting flexible worksites (e.g., telework) and hours, as well as by applying limits to occupancy of indoor spaces and to the size of social gatherings.

Increased testing, diagnosis, and isolation. Isolation is used to separate persons infected with SARS-CoV-2 from those who are not infected; persons who are identified by testing to be infected should be rapidly isolated.^{§§} Estimates vary, however, $>40\%$ of persons infected with SARS-CoV-2 might be asymptomatic, and transmission from presymptomatic persons (those who are not symptomatic at the time they transmit infection, but who later experience symptoms) and asymptomatic persons (infected persons who never experience symptoms) is estimated to account for $>50\%$ of all transmission (2,3). Therefore, reliance on symptom screening to identify infected persons is inadequate (12). Increased testing is an important strategy to interrupt silent transmission of SARS-CoV-2 from asymptomatic and presymptomatic persons. However, because the sensitivity of available tests and the time since exposure varies, a negative test might provide false reassurance; thus, all

prevention strategies should continue to be followed including use of face masks and maintaining physical distance. A comparative analysis of data from six large countries demonstrated that high levels of testing, combined with robust contact tracing, can substantially reduce the transmission of SARS-CoV-2 (13). Frequent testing and contact tracing, combined with other mitigation measures, effectively limited SARS-CoV-2 transmission on a college campus (14). In addition to testing symptomatic persons and those with known exposure, a strategy of routinely testing certain population groups with high numbers of interactions with other persons, based on their occupational or residential setting, can more rapidly identify asymptomatic and presymptomatic infectious persons and their close contacts for isolation and quarantine.^{¶¶} Communities with high or increasing SARS-CoV-2 transmission should increase screening testing, focusing on persons at increased risk for exposure (e.g., workers in high-density worksites) or persons who might have the potential to transmit infection to large numbers of other persons (e.g., persons working in congregate settings) or to transmit to persons at risk for severe COVID-19–associated illness or death (e.g., staff members in nursing homes). Expanded screening testing should be implemented in a manner that promotes health equity for persons with limited resources or other barriers to accessing health care. In addition, prompt reporting of test results to the person tested and to public health authorities can facilitate rapid isolation, case investigation and contact tracing, and accurate monitoring of COVID-19 in the community.

Prompt case investigation and contact tracing to identify, quarantine, and test close contacts. Case investigation is the process of obtaining comprehensive information about persons with a diagnosis of COVID-19 and is followed by contact tracing, which includes identifying and communicating with persons exposed to SARS-CoV-2 (i.e., close contacts^{***}) to inform them of their exposure, educate them about risks for and symptoms of COVID-19, and encourage them to quarantine, seek testing, and monitor themselves for signs or symptoms of illness.^{†††} Quarantine is used to keep a person who was exposed to SARS-CoV-2 away from others.^{§§§} Contact tracing is most feasible when the incidence of COVID-19 in the community or workplace is low or declining, when testing and reporting of results can occur quickly (15), and when most contacts can be reached and quarantined (16). When one or more of these conditions is not met or when local capacity is

^{¶¶} <https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/expanded-screening-testing.html>.

^{***} <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/appendix.html#contact>.

^{†††} <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/contact-tracing.html>.

^{§§§} <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html>.

^{**} <https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html>.

^{††} <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/going-out.html>.

^{§§} <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/isolation.html>.

overwhelmed, health departments should narrow the scope of contact tracing activities and emphasize community mitigation measures. Investigations should prioritize persons who most recently received positive SARS-CoV-2 test results, as well as identify and quarantine household contacts and persons exposed in a congregate living facility, high-density workplace, or other setting (or event) with potential extensive transmission.^{¶¶¶} Because the risk for household transmission is high and occurs rapidly in the absence of face masks or other protective behaviors, household members of persons with diagnosed COVID-19 should be quarantined, and, in the event that they experience symptoms or receive a positive test result, they should be isolated (9,17). Eliciting and reaching contacts in a timely manner is challenging (18,19), and quarantine can impose economic and financial burdens (20); adherence to quarantine might require provision of appropriate support services.^{****} Persons who receive positive SARS-CoV-2 test results should also be encouraged to serve as their own contact tracers by informing close contacts that they have been exposed and encouraging those persons to quarantine, monitor for symptoms, and seek testing.

Safeguarding persons most at risk for severe illness or death. To protect those who are at highest risk for severe COVID-19–associated outcomes, universal mitigation efforts are needed. SARS-CoV-2 infection can be completely asymptomatic or can manifest as a life-threatening illness; disease can result in postacute and long-term sequelae or disability among survivors. Risk for severe illness increases with age and is highest for those aged ≥85 years.^{††††} In the United States, approximately 80% of reported COVID-19 deaths have occurred in patients aged ≥65 years.

Certain underlying medical conditions also increase risk for severe illness or death for persons of any age with COVID-19.^{§§§§} Long-term care facilities serve older adults and persons with complex medical conditions; COVID-19 can spread rapidly in these congregate settings, resulting in high rates of morbidity and mortality. To prevent introduction and transmission of SARS-CoV-2, these facilities should implement strict infection prevention and control measures and expanded screening testing of both staff members and residents to rapidly identify and isolate infected persons.^{¶¶¶¶}

^{¶¶¶} <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/prioritization.html>.

^{****} <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/support-services.html>.

^{††††} <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html>.

^{§§§§} <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>.

^{¶¶¶¶} <https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-home-long-term-care.html>.

COVID-19 has also disproportionately affected racial and ethnic minority groups.^{*****} An age-standardized analysis of COVID-19–associated deaths reported to the National Vital Statistics System through November 25, 2020, found that Black persons accounted for 26.9% of COVID-19–related deaths, despite representing 12.7% of the U.S. population.^{†††††} Persons who belong to racial or ethnic minority groups are likewise disproportionately affected by the underlying medical conditions that increase risk for severe COVID-19 illness and death, likely because of long-standing inequities in social determinants of health. Members of racial or ethnic minority groups are more likely to experience lower socioeconomic status, to live in crowded housing, and possibly to be employed in occupations that require in-person work.^{§§§§§} In addition, access to health care might be limited, including obtaining testing and care for COVID-19.

Persons who are at highest risk for severe COVID-19–associated illness or death or who share a household with someone at high risk should minimize their individual and household risk by avoiding nonessential interactions with persons outside their household whenever possible and implementing all recommended public health prevention strategies. Some approaches to safeguarding those with underlying medical conditions include promoting access to and use of telehealth when feasible and appropriate, use of no-contact pickup for groceries or other essential items, and use of online (versus in-person) educational instruction.

Protecting essential workers. Essential (critical infrastructure) workers include health care personnel and employees in other essential workplaces (e.g., first responders and grocery store workers).^{¶¶¶¶¶} Protecting essential workers requires full implementation of all evidence-based strategies outlined in this guidance. When a COVID-19 vaccine is authorized for use by the Food and Drug Administration (FDA) and recommended by the Advisory Committee on Immunization Practices (ACIP), essential workers, including health care personnel, are among the populations being considered for initial phased allocation of limited vaccine doses (21). Implementation of infection prevention and control with adequate supplies and extensive use of telehealth options and nurse-directed triage of patients, as well as screening of all persons entering health care facilities for signs and symptoms of COVID-19, can protect health care personnel and reduce risk for SARS-CoV-2 transmission in health care facilities.^{*****} U.S. food manufacturing

^{*****} <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html>.

^{†††††} https://www.cdc.gov/nchs/nvss/vsrr/covid19/health_disparities.htm.

^{§§§§§} https://www.census.gov/content/dam/Census/programs-surveys/ahs/publications/Measuring_Overcrowding_in_Hsg.pdf.

^{¶¶¶¶¶} <https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce>.

^{*****} <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>.

and agriculture is another sector that has been substantially affected by COVID-19, especially among workers in meat and poultry processing facilities, with disproportionate effects among persons who belong to racial or ethnic minority groups (22). CDC and the Occupational Safety and Health Administration released guidance on administrative and engineering controls that should be part of COVID-19 assessment and control plans for these workplaces.^{†††††} When cessation of operation of a facility might cause serious harm or danger to public health or safety, essential workers who are known close contacts of persons with confirmed COVID-19 might need to return to work as a last resort; however, if they return to work, they should use face masks and maintain physical distancing, and the workplace should be appropriately disinfected.^{§§§§§} These persons should only return to work if they are and remain asymptomatic and undergo at least daily active symptom monitoring with immediate removal from the workplace if any signs or symptoms of possible COVID-19 occur; viral testing of all close contacts is recommended, and those with positive test results should not return to work.

Postponing travel. Travel increases the likelihood of SARS-CoV-2 exposure and infection and could translocate infection between communities. Postponing travel is the best way to reduce this risk.^{¶¶¶¶¶} Any traveler who is symptomatic, has had close contact with a person with COVID-19 and has not met criteria for release from quarantine, or has a positive or pending SARS-CoV-2 test result should not travel.^{*****} For those contemplating international travel, CDC recommends getting tested with a viral test for SARS-CoV-2 1–3 days before departure and getting retested 3–5 days after arrival.^{†††††††} Domestic travelers should also consider testing. Testing does not eliminate all risk and should be combined with other recommended public health strategies. Both domestic and international travelers should stay home or reduce nonessential activities before travel, and for 7 days after travel if tested, even if test results are negative. If not tested, this period should be extended to 10 days. Travelers should be diligent about mask wearing, physical distancing, hand hygiene, and symptom monitoring. For 14 days after arrival, travelers should avoid close contact with persons at higher risk for severe COVID-19–associated outcomes and wear masks in household spaces shared with those who did not travel.

^{†††††} <https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/meat-poultry-processing-workers-employers.html>.

^{§§§§§} https://www.cdc.gov/coronavirus/2019-ncov/community/critical-infrastructure-sectors.html?CDC_AA_refVal.

^{¶¶¶¶¶} <https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html>.

^{*****} <https://www.cdc.gov/coronavirus/2019-ncov/travelers/when-to-delay-travel.html>.

^{†††††††} <https://www.cdc.gov/coronavirus/2019-ncov/travelers/testing-air-travel.html>.

Increased room air ventilation, enhanced hand hygiene, and cleaning and disinfection. Increasing room air ventilation, enhancing hand hygiene, and cleaning and disinfecting frequently touched surfaces might help decrease transmission of SARS-CoV-2 (23).^{§§§§§§§} Although the epidemiology of SARS-CoV-2 suggests that most transmission is close person-to-person, there have been some documented cases of presumed airborne transmission.^{¶¶¶¶¶¶¶} Avoiding nonessential indoor spaces can help reduce this risk. For indoor settings, increased room air ventilation can decrease the concentration of small droplets and particles carrying infectious virus suspended in the air and, thereby, presumably decrease the risk for transmission.^{*****} Hand hygiene includes handwashing with soap and water or using alcohol-based hand sanitizer.^{††††††††} Handwashing mechanically removes pathogens, and laboratory data demonstrate that hand sanitizers that contain at least 60% alcohol inactivate SARS-CoV-2 (24). These strategies, combined with appropriate cleaning and disinfection of surfaces, might prevent indirect transmission through touching surfaces contaminated with virus from an infected person, followed by touching the mouth, nose, or eyes.

Widespread availability and use of effective vaccines. Widespread availability and high community coverage with safe and effective COVID-19 vaccines represent the most important public health strategy to control the pandemic. Many COVID-19 vaccine candidates are currently in clinical trials. Promising products are being manufactured in anticipation of Emergency Use Authorization from the FDA. The federal government has established a centralized system to order, distribute, and track COVID-19 vaccines through states, tribal nations, and territories; these jurisdictions are preparing for vaccination with extensive planning for vaccine distribution and administration.^{§§§§§§§§} After FDA authorization of the use of one or more COVID-19 vaccines in the United States, the ACIP will review safety and efficacy data for each of the authorized vaccines and will issue recommendations for use to ensure equitable access (21,25). Ensuring transparency in these efforts, monitoring for adverse events, and working with communities to address concerns will be critical to obtaining the confidence and trust of the public and health care providers. CDC and FDA will monitor the effectiveness and safety of all COVID-19 vaccines and update and communicate this information regularly. Vaccinated persons should continue

^{§§§§§§§} <https://www.cdc.gov/coronavirus/2019-ncov/community/clean-disinfect/index.html>.

^{¶¶¶¶¶¶¶} <https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-sars-cov-2.html>.

^{*****} <https://www.cdc.gov/niosh/conferences/events/heatventair.html>.

^{††††††††} <https://www.cdc.gov/coronavirus/2019-ncov/global-covid-19/handwashing.html>.

^{§§§§§§§§} <https://www.cdc.gov/vaccines/covid-19/planning/index.html>.

Summary**What is already known about this topic?**

The United States is experiencing high levels of SARS-CoV-2 transmission.

What is added by this report?

COVID-19 pandemic control requires a multipronged application of evidence-based strategies while improving health equity: universal face mask use, physical distancing, avoiding nonessential indoor spaces, increasing testing, prompt quarantine of exposed persons, safeguarding those at increased risk for severe illness or death, protecting essential workers, postponing travel, enhancing ventilation and hand hygiene, and achieving widespread COVID-19 vaccination coverage.

What are the implications for public health practice?

These combined strategies will protect health care, essential businesses, and schools, bridging to a future with high community coverage of effective vaccines and safe return to more activities in a range of settings.

to adhere to all mitigation measures (e.g., mask use, physical distancing, and hand hygiene) until both doses in the series have been received and the duration of immunity provided by vaccines has been sufficiently established.

Discussion

No single strategy can control the pandemic; rather, a multipronged approach using all available evidence-based strategies at the individual and community levels can break transmission chains and address high levels of community transmission; reduce related illnesses, long-term sequelae, and deaths; and mitigate the pandemic's economic impact. Because COVID-19 has disproportionately affected persons with certain risk factors (e.g., age and some underlying medical conditions) and racial/ethnic minorities, implementing public health prevention strategies in a manner that assures health equity is imperative to safeguard those who have borne the worst of the pandemic's impact. The U.S. health care system is being stressed by COVID-19, with multiple jurisdictions establishing expanded or alternative treatment settings. Continuing mitigation efforts will be essential to preserve capacity for adequate treatment of persons with COVID-19 and other urgent health conditions, and to protect essential and preventive services that are not amenable to telehealth. Schools provide numerous benefits beyond education, including school meal programs and social, physical, behavioral, and mental health services. Because of their critical role for all children and the disproportionate impact that school closures can have on those with the least economic means, kindergarten through grade 12 schools should be the last settings to close after all other mitigation measures have been employed and the first to reopen when

they can do so safely.¹ Similarly, full implementation of public health prevention strategies can help preserve the functioning of essential businesses that supply food to the population, contribute to the health protection of communities and individual persons, and fuel economic recovery. Full implementation of and adherence to these strategies will save lives. As communities respond to high levels of SARS-CoV-2 transmission, these strategies will also provide the necessary bridge to a future with wide availability and high levels of coverage with effective vaccines, and thereby a safe return to more everyday activities in a range of settings.

¹<https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/indicators.html>.

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CDC COVID-19 Response Team

Eduardo Azziz-Baumgartner, CDC; Sarah Bennett, CDC; Chris Braden, CDC; Jennifer Buigut, CDC; Tom Chiller, CDC; Cindy R. Friedman, CDC; Carolyn M. Greene, CDC; Olga Henao, CDC; Christine Kosmos, CDC; Adam MacNeil, CDC; Barbara Marston, CDC; Greta Massetti, CDC; Jose Montero, CDC; Cria G. Perrine, CDC; Kara Polen, CDC; Karen Remley, CDC; Reynolds Salerno, CDC; Kelly A. Shaw, CDC; Ian Williams, CDC.

Corresponding author: Margaret A. Honein, mrh7@cdc.gov.

¹CDC COVID-19 Emergency Response.

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Implementing Mitigation Strategies in Early Care and Education Settings for Prevention of SARS-CoV-2 Transmission — Eight States, September–October 2020

Fátima Coronado, MD¹; Sara Blough, MPH¹; Deborah Bergeron, PhD²; Krista Proia, MPH¹; Erin Sauber-Schatz, PhD¹; Marco Beltran, DrPH²; Katherine Troy Rau, MSW, MPP²; Andria McMichael, EdD²; Tracye Fortin, MA^{2,3}; Mark Lackey²; Jovanna Rohs, PhD²; Tracey Sparrow, EdD^{2,3}; Grant Baldwin, PhD¹

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The Head Start program, including Head Start for children aged 3–5 years and Early Head Start for infants, toddlers, and pregnant women, promotes early learning and healthy development among children aged 0–5 years whose families meet the annually adjusted Federal Poverty Guidelines* throughout the United States.† These programs are funded by grants administered by the U.S. Department of Health and Human Services' Administration for Children and Families (ACF). In March 2020, Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act,§ which appropriated \$750 million for Head Start, equating to approximately \$875 in CARES Act funds per enrolled child. In response to the coronavirus disease 2019 (COVID-19) pandemic, most states required all schools (K-12) to close or transition to virtual learning. The Office of Head Start gave its local programs that remained open the flexibility to use CARES Act funds to implement CDC-recommended guidance (1) and other ancillary measures to provide in-person services in the early phases of community transmission of SARS-CoV-2, the virus that causes COVID-19, in April and May 2020, when many similar programs remained closed. Guidance included information on masks, other personal protective equipment, physical setup, supplies necessary for maintaining healthy environments and operations, and the need for additional staff members to ensure small class sizes. Head Start programs successfully implemented CDC-recommended mitigation strategies and supported other practices that helped to prevent SARS-CoV-2 transmission among children and staff members. CDC conducted a mixed-methods analysis to document these approaches and inform implementation of mitigation strategies in other child care settings. Implementing and monitoring adherence to recommended mitigation strategies reduces risk for COVID-19 transmission in child care settings. These approaches could be applied to other early care and education settings that remain open for in-person learning and potentially reduce SARS-CoV-2 transmission.

* <https://aspe.hhs.gov/poverty-guidelines>.

† <https://www.acf.hhs.gov/ohs/about/head-start>.

§ <https://home.treasury.gov/policy-issues/cares>.

In collaboration with ACF, CDC conducted a mixed-methods study during September–October 2020 in Head Start programs in eight states (Alaska, Georgia, Idaho, Maine, Missouri, Texas, Washington, and Wisconsin). Head Start programs, each with five to 17 centers and 500–2,500 children, were selected by the Office of Head Start. The four-phase study design included reviews of standard operating procedures (SOPs) for COVID-19 mitigation, deployment of an online survey for program directors to document mitigation strategies implemented and COVID-19 cases reported, in-depth interviews with staff members from five programs overall, and observation of mitigation strategy implementation during a virtual visit to one Head Start site. This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.¶

All program sites closed for periods ranging from 2 weeks to 2 months after state-initiated mandates in April and May and upon reopening offered a hybrid** learning model (i.e., in-person and virtual). The Office of Head Start allowed administrative flexibility in how programs could use funding, encouraged innovation in implementing CDC guidance (1), and provided resources for implementing multiple concurrent preventive strategies (e.g., delivery of webinars to >240,000 staff members, parents, community members, and partners). All programs developed SOPs during March–April 2020 and began implementing these procedures in April. All SOPs covered multicomponent mitigation practices and promoted behaviors designed to reduce infection spread, create healthy environments, facilitate healthy operations, and explain procedures to follow in the event of identification of a COVID-19 case.

Seven of eight Head Start programs, representing 55 centers, responded to the survey. All reported implementing SOPs and adjusting them depending on guidance from the local public health authorities or education department, local level of transmission and related factors described below. Multiple strategies were implemented simultaneously, including training teachers and encouraging caretakers to adhere to SOPs and

¶ 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 501 et seq.

** <https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html>.

mitigation strategies; instituting flexible medical leave policies for staff members; providing and requiring use of masks for all staff members and children; and supervising handwashing and hand-sanitizing for children (Box). Variations regarding methods for screening the health of staff members and children were noted; among these methods, self-administered

temperature checks upon arrival were most frequently reported for staff members. Screening for signs and symptoms^{††} of illness upon arrival was most frequently reported for children. Mask policies for children varied, and exemptions for children

^{††} <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>.

BOX. COVID-19 mitigation strategies implemented by Head Start and Early Head Start child care programs — eight states,* September–October 2020

Everyday prevention actions

- Reinforcement of hand hygiene behavior and respiratory etiquette
- Supervised handwashing and hand-sanitizing for children
- Intensified cleaning and disinfection efforts (e.g., with toys, frequently touched surfaces, and bedding)
- Required use of masks for staff members, visitors, and children aged >2 years
- Social distancing to the extent possible
- Daily health screening procedures on arrival for children and staff members
- Drop-off and pick-up procedures
- Monitoring for absenteeism
- Ability to monitor and restock supplies
- Steps to increase ventilation including installation of ion air purifiers
- Steps to decrease occupancy in areas without increased ventilation
- Use of outdoor space as much as possible
- Cohorting by classroom to minimize exposure between groups

Actions when someone is ill

- COVID-19 point of contact identified
- Staff members trained in COVID-19 safety protocols
- Requiring ill children and staff members to stay at home
- Vigilance for symptoms
- Daily screening of staff members and children for signs and symptoms before facility entry
- Standard operating procedures for when a child or staff member experiences symptoms
- Identification of isolation room
- Plan to notify local health official of COVID-19 cases
- Plan to distribute instructions for primary care referral, testing, or both
- Plan to distribute instructions or guidance for home isolation
- Plan to require close contacts to wait 14 days before returning
- Flexible COVID-19 medical leave policies for staff members

Communications and support

- Training and ongoing reinforcing of standard operating procedures and mitigation measures with caregivers, teachers, and other staff members
- Vigilance and training for the identification of COVID-19 related symptoms
- Masks and other personal protective equipment (e.g., face shields and gowns) provided to teachers and other staff members
- Incentives to adhere to mitigation strategies
- Flexible medical leave policies for staff members with emphasis on persons at higher risk for severe illness and those with caregiving responsibilities
- Flexible work hours and staggered shifts
- Telework options for staff members at higher risk for severe illness

Abbreviation: COVID-19 = coronavirus disease 2019.

*Alaska, Georgia, Idaho, Maine, Missouri, Texas, Washington, and Wisconsin.

aged <2 years and those with special health care and education needs were allowed. All programs reported increased cleaning and disinfecting or sanitizing of high-traffic areas, high-touch surfaces, and toys. Five programs reported increasing cleaning and disinfecting of bedding and improving ventilation. Guidance from public health or education agencies and state or local mandates were the factors most commonly reported to influence decisions about SOP adjustments. Other, less frequently reported, factors included concerns about transmission of SARS-CoV-2 within facilities and perceived pressure from the community.

All programs reported having plans in place for managing children and staff members experiencing COVID-19 symptoms. Three programs identified nine cases among children in three centers (range = one to four cases per center) during May and June. Administrators followed SOPs for notification, isolation, facility closure, and cleaning and disinfection. All three centers were closed for in-person operation for 14 days after identification of a case but offered virtual options to continue providing services. Respondents from all seven programs reported that centers had a designated isolation area. One program did not report whether a designated isolation area existed; however, this program reported ability to isolate a suspected case. All but one program had a protocol for working with the local health department if a positive case was identified; all indicated that the local health department would be contacted if a case was identified. All programs had established procedures for notifying parents or caregivers of close contacts.

Interviews were conducted in September and October with program directors identified by the Office of Head Start in five states (Alaska, Georgia, Maine, Missouri, and Wisconsin). A common theme identified was the flexibility offered for staffing and operations, including flexible medical leave, enhanced benefits during the pandemic (e.g., additional financial benefits to cover health care–associated costs), and remote working options. Staff members who were at increased risk for severe illness^{§§} because of underlying medical conditions or age and those with caregiving responsibilities were offered virtual and hybrid teaching opportunities, flexible hours, and staggered shifts. Policies were put into place for staff members to stay at home without fear of job loss or other consequences. In addition to providing personal protective equipment (e.g., gloves and masks), staff members were furnished with cleaning and other supplies and were offered training, ongoing reinforcement of SOPs, and incentives to abide by mitigation strategies (e.g., a program provided a financial incentive for staff members to purchase additional supplies).

A second theme identified was ongoing communications among program administrators, parents and caregivers, and teachers and other staff members to ensure understanding of SOPs. Communications included updates on program websites, development of instructional videos, written information, virtual meetings, media coverage, social media postings, and posted signage at facilities.

Factors facilitating successful implementation of mitigation strategies included extensive communication with consistent messaging to staff members and parents; ongoing training and support to staff members; continuous engagement of community partners and parents; and collaboration with program nurses, local health departments, hospital systems, and community organizations (e.g., United Way and Boys & Girls Club). Challenges included maintaining recommended social distancing, ventilation, weather concerns during the fall and heading into winter, parental mental health concerns (e.g., chronic stress, depression, anxiety, and trauma related to losing a loved one to COVID-19), questions concerning effects of staff members wearing masks on infant and toddler psychosocial development, maintaining guidance vigilance, and concern that programs were being overly cautious.

A virtual visit to a Head Start site in Texas found that staff members and children observed social distancing. In rooms with children aged <2 years, mask use was only observed among staff members, per CDC guidelines. Physical dividers were observed, including an innovative playground divider purchased with CARES Act funding that allowed for more outdoor play time for children. Cleaning and disinfecting protocols were described, along with guidance for stocking and monitoring the supply room to ensure adequate supplies. Plans for responding to positive SARS-CoV-2 tests were reviewed, and all included a rapid notification system for all enrolled families. To continue enrollment for the fall, a contactless application system using quick-response codes on community flyers had been implemented.

Discussion

Children can acquire and transmit SARS-CoV-2 in school and child care settings (2,3). Since the COVID-19 pandemic started, Head Start and Early Head Start programs successfully implemented CDC-recommended mitigation strategies and applied other innovative approaches to limit SARS-CoV-2 transmission among children, teachers, and other staff members by allowing maximum program flexibility and allocating financial and human resources. As CDC learned more about

^{§§} <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>.

Summary**What is already known about this topic?**

The benefits of in-person child care programs are myriad; however, SARS-CoV-2 transmission has been documented in child care facilities.

What is added by this report?

Head Start and Early Head Start programs successfully implemented CDC-recommended guidance and other ancillary measures for child care programs that remained open, allowing them to continue offering in-person learning. These approaches were documented to guide implementation of mitigation strategies in child care settings.

What are the implications for public health practice?

Implementing and monitoring adherence to recommended mitigation strategies can reduce risk for SARS-CoV-2 transmission in child care settings. These approaches could be applied to other early care and education settings that remain open for in-person learning and potentially reduce the spread of coronavirus disease 2019.

COVID-19, the agency provided updated guidance for various settings, including child care programs, with options for screening children upon arrival. This guidance helps to ensure that children who have a fever or other signs of illness are not admitted to the facility and offers additional options that can be considered if personal protective equipment is in short supply (1).

SARS-CoV-2 transmission investigations in Rhode Island and Utah indicated that implementation of CDC-recommended mitigation strategies contributed to limiting transmission of SARS-CoV-2 in child care facilities in both states (3,4). This report describes how a comprehensive, multipronged approach for SARS-CoV-2 mitigation strategies, used in early care and education settings, specifically Head Start programs, might have helped to slow transmission, as few cases occurred. Financial and staffing resources were allocated to prioritize mitigation strategies; support to staff members and parents were critical components for these programs to help minimize the potential for negative consequences that can be associated with child care center closure, including providers' loss of jobs and wages, parents' challenges when returning to work, and children's diminished educational, social, and nutritional opportunities (5).

Implementing and monitoring adherence to CDC-recommended mitigation strategies could play a crucial role in reducing SARS-CoV-2 transmission in child care settings.

CDC developed tools and resources for child care programs, including examples of evaluation questions, related qualitative and quantitative indicators, and suggested data sources to understand the impact of COVID-19 mitigation strategies in child care programs (6). For example, child care facilities can identify facilitators, barriers, and other factors affecting implementation of mitigation strategies. Baseline information can include characteristics of the child care program (e.g., number of children in the program, child-to-staff member ratio, parental or community attitudes and involvement, and rates of retention or attrition among staff members and volunteers). This can help identify gaps and areas where additional mitigation strategies can be implemented or strengthened.

The findings in this report are subject to at least two limitations. First, this qualitative descriptive analysis might not be generalizable beyond the participating Head Start programs; however, programs were geographically diverse and represented all four U.S. Census regions. Second, study outcomes could not be attributed to implemented mitigation strategies; however, these strategies and the merits of a multicomponent mitigation approach have been documented to reduce SARS-CoV-2 transmission (7,8). Additional evaluation is needed to understand how multicomponent mitigation strategies work in child care settings that remain open for in-person learning in areas with high community transmission.

The benefits of child care programs (e.g., helping to achieve developmental milestones, nutritional support, socialization, and improved mental health) are many. Understanding child care programs' capabilities for implementing COVID-19 mitigation strategies provides practical information that public health officials, child care setting administrators, and evaluators can use to implement and adjust strategies to reduce SARS-CoV-2 transmission. Child care settings should implement concurrent preventive measures and adjust these strategies based on community transmission data (9).

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Jason M. Clemmons, Office of Head Start.

Corresponding author: Fátima Coronado, FCoronado@CDC.gov.

¹CDC COVID-19 Response Team; ²Office of Head Start, Washington, DC; ³Educare Learning Network, Chicago, Illinois.

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Notes from the Field

Understanding Smoke Exposure in Communities and Fire Camps Affected by Wildfires — California and Oregon, 2020

Kathleen Navarro, PhD¹; Ambarish Vaidyanathan, PhD²

During 2020, the United States has experienced unseasonably higher fire activity than in past years, resulting in >7.8 million burned acres; as of December, wildfires were still active in the western United States (1). A major public health concern associated with wildfires is exposure to air pollutants, such as fine inhalable particles in smoke, with aerodynamic diameters $\leq 2.5 \mu\text{m}$ (particulate matter [PM]_{2.5}). Exposure to wildfire smoke can irritate the lungs, alter immune function, and increase susceptibility to respiratory infections. In addition, exacerbations of asthma, chronic obstructive pulmonary disease, cardiovascular disease, and possibly increased mortality are associated with smoke exposure* (2). Characterizing smoke exposure levels for communities located near the fires and personnel involved in response efforts is a critical public health function during wildfire episodes.

To characterize smoke exposure levels, CDC deployed two staff members to support the Interagency Wildland Fire Air Quality Response Program (IWFAQRP)[†] as air resource advisors for wildfire incidents in California and Oregon. Air resource advisors are fully integrated into the wildfire incident management teams and provide insights into understanding and predicting air pollution exposures from wildfire smoke emissions. Air resource advisors interact with various stakeholders, including air quality regulators, fire personnel, public health practitioners, and community residents. A primary aspect of this engagement is to forecast smoke levels for areas immediately affected by fires and generate a daily smoke outlook[§] for keeping stakeholders informed of prevailing smoke levels. 2020 is the first year during which CDC worked with IWFAQRP and deployed staff members as air resource advisors for wildfire incidents. From August 31 to September 14, 2020, one CDC staff member supported wildfire incidents in central Oregon's Cascade Range, which included Beachie Creek, Holiday Farm, Lionshead, and Riverside wildfires. Strong east winds across the Cascade Mountains resulted in >560,000 acres of fire growth during September 7–10 (1). Another CDC staff member was deployed for the Creek fire incident from September 20 to October 5, 2020. The Creek fire incident in the Southern Sierra Nevada region of California

started September 4 and grew to 193,000 acres during its first week (1); as of December 3, 2020, the fire had consumed 379,895 acres.[¶]

During these two deployments, several public health concerns came to light. Of note, although smoke from wildfires drifted long distances and affected downwind communities, the brunt of poor air quality was observed in communities adjacent to wildfire incidents. For example, communities located near the fire perimeter of wildfire incidents in California and Oregon experienced high concentrations of PM_{2.5}, as measured by air quality monitors, resulting in “Unhealthy” to “Hazardous” conditions, as defined by the U.S. Environmental Protection Agency Air Quality Index** (Figure). Fire personnel who camped and rested between work shifts at nearby fire camps^{††} (North Fork, California and Sisters, Oregon) were also exposed to poor air quality levels. These fire camp exposures contribute to higher overall cumulative smoke exposure and, along with other occupational risk factors such as fatigue and stress, could limit recovery that is much needed for fire personnel while away from the active fire perimeter. In addition, environmental hazards such as extreme heat and higher concentrations of ambient carbon monoxide^{§§} were prevalent during days with heavy smoke and after extreme fire growth days; these hazards added a layer of complexity to fire response efforts and might have limited fire personnel recovery^{¶¶} between work shifts.

High smoke levels and other hazards present during wildfires reinforce the need for professionals such as air resource advisors, who are trained in smoke-health issues and related public health topics, to be included on wildfire incident teams. Observations made by CDC staff members, as well as other air resource advisors, on environmental and occupational risk factors and their public health consequences on nearby communities and fire camps can inform future wildfire response efforts. Coordination among public health and land management agencies at multiple levels before, during, and after wildfire incidents can help mitigate adverse health effects. CDC continues to collaborate with federal land management agencies, which manage and support wildfire incidents, to understand the adverse health impacts of smoke exposure on communities and wildland firefighters.

[¶] <https://inciweb.nwccg.gov/incident/7147>.

** <https://www.airnow.gov/aqi/aqi-basics/>.

†† Fire camps typically provide logistical support to the wildfire suppression operation by providing firefighters and incident personnel sleeping locations (camping), morning and evening meals, workspaces, and administrative services.

§§ <https://www.nasa.gov/feature/jpl/nasa-monitors-carbon-monoxide-from-california-wildfires>.

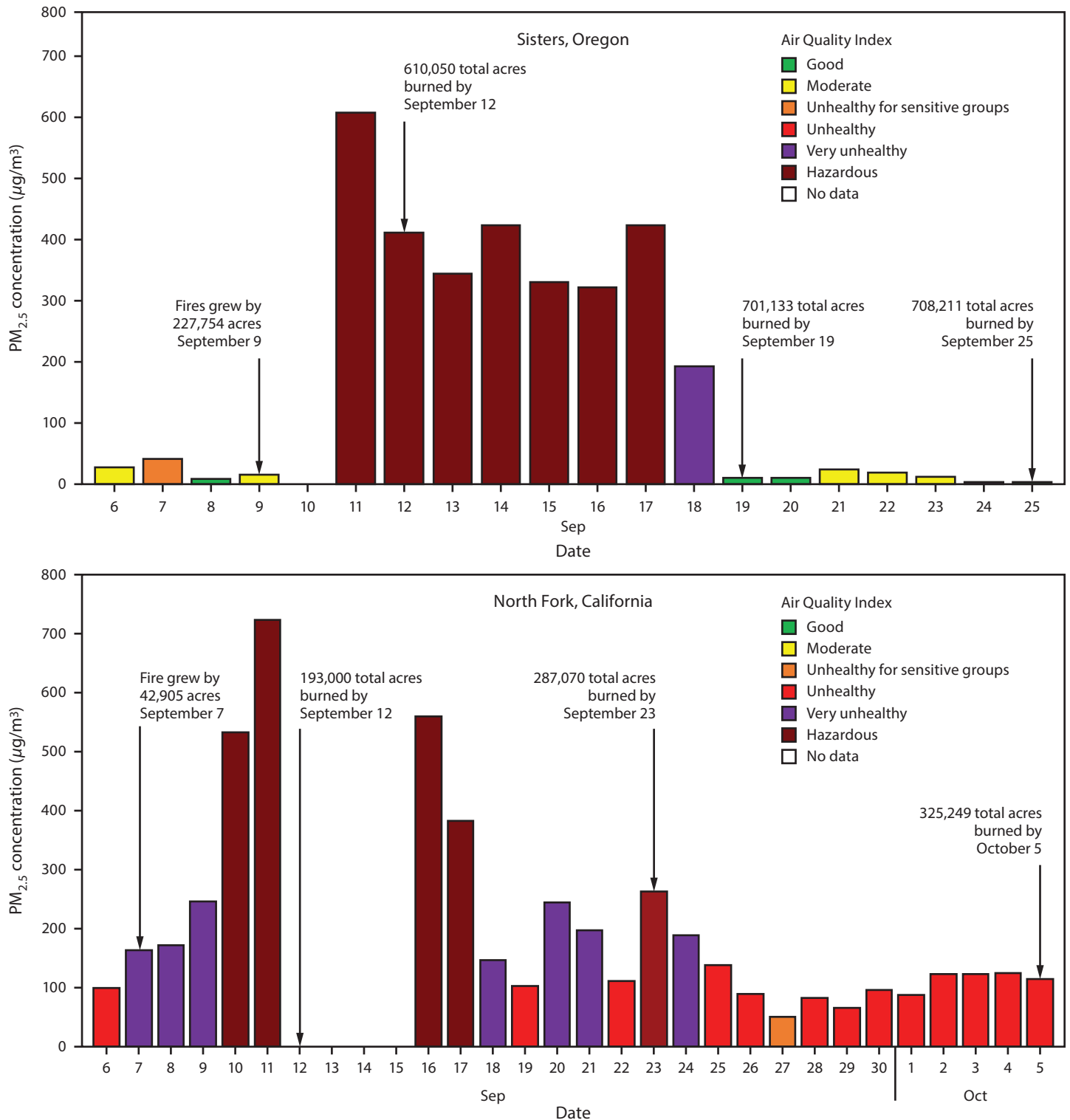
¶¶ <https://www.nifc.gov/PUBLICATIONS/redbook/2020/Chapter07.pdf>.

* <https://www.cdc.gov/air/wildfire-smoke/default.htm>.

† <https://wildlandfiresmoke.net>.

§ <https://tools.airfire.org/ara/deployments/>.

FIGURE. Daily 24-hour average particulate matter concentrations and Air Quality Index* for selected fire camp† sites during air resource advisor deployments — California[§] and Oregon,[¶] September–October 2020



Abbreviation: PM_{2.5} = particles with aerodynamic diameters ≤2.5 µm.

* Sensitive groups include persons aged ≤18 years; adults aged ≥65 years; pregnant women; persons with chronic health conditions such as heart or lung disease, including asthma and diabetes; outdoor workers; persons experiencing homelessness, and those with limited access to medical care. (<https://www.cdc.gov/air/wildfire-smoke/default.htm>).

† Fire camps typically offer logistical support to the wildfire suppression operation by providing firefighters and incident personnel sleeping locations (camping), morning and evening meals, workspaces, and administrative services.

[§] The monitoring instrument in North Fork, California, recorded errors and did not report data during September 12–15, 2020.

[¶] Start date of Creek Fire in California was September 4. Start dates of fires in Oregon were as follows. Lionshead was August 16; Beachie Creek was August 16; Holiday Farm was September 7; Riverside was September 8.

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Corresponding author: Ambarish Vaidyanathan, rishv@cdc.gov, 770-488-3997.

¹Division of Field Studies and Engineering, National Institute for Occupational Safety and Health, CDC; ²Division of Environmental Health Science and Practice, National Center for Environmental Health, CDC.

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Notes from the Field

First Case in the United States of *Neisseria gonorrhoeae* Harboring Emerging Mosaic *penA60* Allele, Conferring Reduced Susceptibility to Cefixime and Ceftriaxone

Michael A. Picker, PhD¹; Ronald J. Knoblock, MD^{1,2}; Holly Hansen¹; Ilene Bautista, MPH^{1,2}; Rey Griego¹; Lora Barber¹; William Bendik¹; Kit Lam¹; Elizabeth Adelman³; Zuwen Qiu-Shultz³; Brian H. Raphael, PhD⁴; Cau D. Pham, PhD⁴; Ellen N. Kersh, PhD⁴; Hillard Weinstock, MD⁴; Sancta B. St. Cyr, MD⁴

In November 2019, the Southern Nevada Public Health Laboratory of the Southern Nevada Health District (SNHD) identified a male urethral gonococcal isolate later demonstrating reduced susceptibility to cefixime (minimum inhibitory concentration [MIC] = 2.0 µg/mL) and ceftriaxone (MIC = 1.0 µg/mL) but susceptible to azithromycin (MIC = 0.25 µg/mL). Molecular testing by CDC in the United States revealed the emerging mosaic *penA60* allele, first identified in Japan in 2016 (1), which confers reduced susceptibility to cephalosporins and increases the risk for treatment failure. The *penA60* allele has been identified in China (2), Canada (3,4), Denmark (5), Australia (6), France (7), and the United Kingdom (8). The Nevada case is the first identified case of a *Neisseria gonorrhoeae* isolate harboring the mosaic *penA60* allele reported in the United States.

The SNHD in Las Vegas, Nevada, participates in the Gonococcal Isolate Surveillance Project (GISP), the U.S. sentinel surveillance program for monitoring antibiotic-resistant gonorrhea (<https://www.cdc.gov/std/gisp/default.htm>). As part of the project, the Sexual Health Clinic at SNHD collects urethral samples for gonococcal culturing from the first 25 men each month, on average, with symptoms consistent with urethral gonococcal infection. All *N. gonorrhoeae* isolates are sent to the Texas Department of State Health Services Laboratory, part of CDC's Antibiotic Resistance Laboratory Network, where MICs are determined via agar dilution. Susceptibility results are then reported back to SNHD and CDC.

This SNHD gonococcal isolate was collected from an HIV-negative, heterosexual man with penile discharge and dysuria in October 2019; he was empirically treated with the recommended regimen of ceftriaxone (250 mg) given intramuscularly plus azithromycin (1 g) administered orally (9). Nucleic acid amplification tests (NAATs) and cultures collected from the patient's rectum and pharynx were negative for *N. gonorrhoeae*. After the susceptibility results from the urethral isolate were confirmed by CDC in late November 2019, he was encouraged to return to SNHD for repeat testing and evaluation.

At his follow-up visit at the end of November 2019, the patient reported that his urethral symptoms had resolved. Repeat gonococcal tests at all anatomic sites returned negative results. During this visit, he reported three female sexual partners (one main partner and two casual partners) during the 2 months before he sought care in October 2019. SNHD was unable to contact his main partner, initially because of a 2-month visit overseas with her family beginning in early October 2019 and then because of nonresponse upon her return in January 2020. The patient relayed to SNHD that this main partner had been tested and treated for gonorrhea while in China. It was her communication to him of her diagnosis and treatment, in addition to his onset of symptoms, that prompted him to seek medical evaluation in October 2019. SNHD staff members were able to locate one of his casual partners in December 2019. This casual partner visited SNHD for testing and treatment and received ceftriaxone (250 mg) intramuscularly and azithromycin (1 g) orally. Her genital and extragenital NAATs and subsequent cultures were negative for *N. gonorrhoeae*. His other casual partner was anonymous and could not be contacted because locating information was unavailable.

To identify other cases of *N. gonorrhoeae* with the *penA60* allele in the southern Nevada area, in December 2019, SNHD provided CDC with all *N. gonorrhoeae* NAAT-positive specimens from all SNHD clinics (257 remnant NAATs collected during September 2019–November 2019). Culture-independent molecular testing for the mosaic *penA60* allele of the remnant NAATs (6) identified no additional isolates with the mosaic *penA60* allele. Approximately 5,500 gonococcal isolates were submitted for testing nationwide as part of GISP during January 2019–December 2019. No other isolates had MICs as high as those for the isolate in the Nevada case (2.0 µg/mL for cefixime and 1.0 µg/mL for ceftriaxone). An advisory was sent to state and local jurisdictions in early 2020; the investigation was stopped in February 2020 because no other isolates of concern had been identified.

This *N. gonorrhoeae* isolate with the mosaic *penA60* allele and reduced susceptibility to cefixime and ceftriaxone is the first of its kind detected in the United States. The results of this investigation supported local acquisition of the infection, but the origin of the isolate remains unclear. Its MIC is the highest for ceftriaxone observed since GISP began monitoring ceftriaxone and other antimicrobial susceptibilities in 1986. To date, continued spread of this isolate has not been seen in southern Nevada or GISP. Despite the susceptibility patterns identified in this case, no treatment failures in the United States

using the current recommended regimen of ceftriaxone and azithromycin have been reported. This case highlights the utility and importance of surveillance programs like GISP as effective tools in identifying emerging antimicrobial-resistant pathogens that can negatively impact patient outcomes and threaten public health.

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Corresponding author: Michael A. Picker, picker@snhd.org, 702-759-1020.

¹Southern Nevada Public Health Laboratory of the Southern Nevada Health District, Las Vegas; ²University Medical Center of Southern Nevada, Las Vegas; ³Office of Epidemiology and Disease Surveillance, Southern Nevada Health District, Las Vegas; ⁴Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC.

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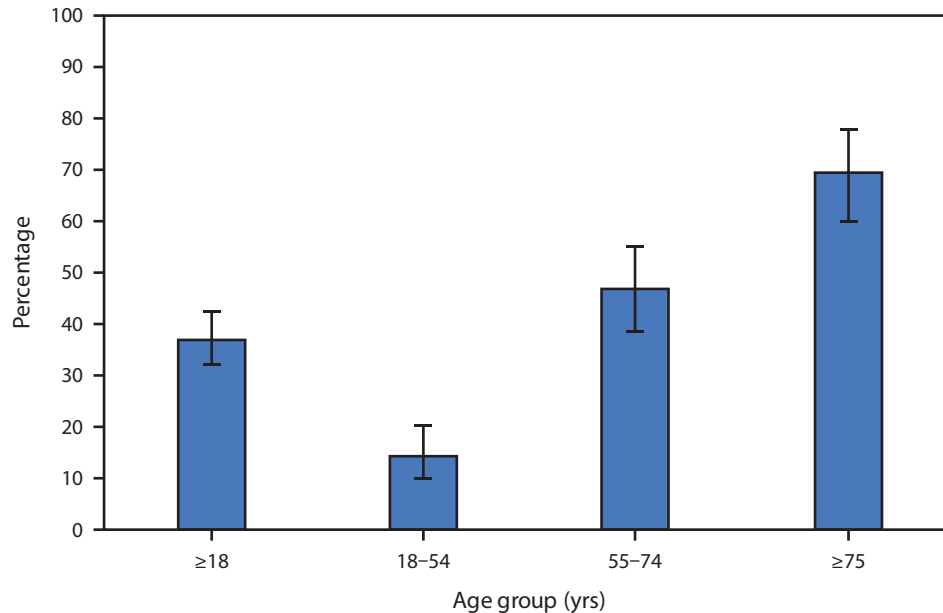
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QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage* of Emergency Department (ED) Visits Made by Adults with Influenza and Pneumonia[†] That Resulted in Hospital Admission, by Age Group — United States, 2017–2018[§]



* With 95% confidence intervals shown with error bars.

[†] Influenza and pneumonia defined as any ED visit with *International Classification of Diseases, Tenth Revision Clinical Modification* (ICD-10-CM) codes J09–J18.

[§] Based on a sample of visits to EDs in noninstitutional general and short-stay hospitals, exclusive of federal, military, and Veterans Administration hospitals, located in the 50 U.S. states and the District of Columbia.

During 2017–2018, 37.2% of ED visits for influenza and pneumonia by adults aged ≥18 years resulted in a hospital admission. The percentage increased with age from 14.4% for adults aged 18–54 years to 46.9% for adults aged 55–74 years and 69.7% for adults aged ≥75 years.

Source: National Center for Health Statistics. National Hospital Ambulatory Medical Care Survey, 2017–2018. https://www.cdc.gov/nchs/ahcd/ahcd_questionnaires.htm.

Reported by: Loredana Santo, MD, nta3@cdc.gov, 301-458-4122; Jill J. Ashman, PhD; Susan M. Schappert, MA.

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