Table 2. Adjusted Associations of VPDs Reported to the National Notifiable Diseases Surveillance System (per 100 000 Population) and Number of Bills Proposed in State Legislatures That Would Affect Vaccine Exemption Law per Year[a]

	Bill Proposal, RR (95% CI)			
	All VPDs		Pertussis Only	
Predictor	Restrict	Expand	Restrict	Expand
Year	1.43 (1.26-1.63)	1.05 (0.94-1.17)	1.41 (1.24-1.60)	1.05 (0.95-1.16)
No. of VPDs[b]	1.54 (1.27-1.88)	0.64 (0.34-1.21)	1.33 (1.10-1.61)	0.43 (0.20-0.95)

Abbreviations: RR, relative risk; VPDs, vaccine-preventable diseases.

[a] Analyses stratified by bill classification. Sensitivity analysis limited VPDs to only reported pertussis. Estimates correspond to the adjusted relative risk of bill proposal with corresponding 95% confidence intervals.

[b] Variable centered and standardized for modeling.

stricting VPDs to only pertussis, the sensitivity analysis revealed significant associations with both types of bills (Table 2).

Discussion | This study revealed an association between reported VPDs and proposed state legislation that would alter vaccine exemption law. Specifically, increased VPDs were associated with an increase in bills that would restrict vaccine exemptions. A potential explanation of this association is that an uptick in VPDs prompts media coverage, raises public awareness, and increases advocacy and subsequent legislative response. This is supported by the sensitivity analysis results that were limited to a disease that has garnered substantial media attention (ie, pertussis).

Our work is predicated on the assumption that exemptions drive outbreaks. There may be other reasons, such as vaccine failure. A second limitation is that our data do not capture the 2019 measles outbreak. Indeed, this outbreak resulted in New York removing nonmedical school vaccination exemptions[6] through the mechanisms we describe.

Counter to the conventional examination of how laws affect health,[7] we flipped the model to explore how health is associated with legislative activity. Results suggest that state legislators may respond to actionable health concerns and introduce bills to decrease the use of nonmedical vaccine exemptions. This is promising in light of increasing vaccine hesitancy and misinformation about childhood vaccinations.

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Emergency Department Admissions for Child Sexual Abuse in the United States From 2010 to 2016

For children who have been sexually abused, emergency department (ED) professionals provide immediate medical care, including testing and treatment for sexually transmitted infections, prophylaxis for potential HIV exposure, and emergency contraception.[1] In some cases, ED clinicians conduct forensic examinations to assist with child protection and criminal investigations.[2] Physicians and nurses in EDs are among the first to recognize the signs of sexual abuse and identify patients who are currently being abused, such as children being exploited in sex trafficking.[3] Despite the medical, criminal justice, and protective roles that ED professionals serve in caring for vulnerable children, few data are available regarding the frequency with which children are admitted to the ED for sexual abuse. Therefore, this analysis observed patterns among children admitted to the ED for sexual abuse across the United

Table. Characteristics of Children Admitted to US Emergency Departments for Confirmed Sexual Abuse, 2010 to 2016

Characteristic	2010 No. (%)	2010 95% CI	2011 No. (%)	2011 95% CI	2012 No. (%)	2012 95% CI	2013 No. (%)	2013 95% CI	2014 No. (%)	2014 95% CI	2015 No. (%)	2015 95% CI	2016 No. (%)	2016 95% CI
Total children, No.	5138	3669-6607	4856	3777-5935	6182	4621-7743	6069	4210-7927	8036	5406-10666	7894	6079-7909	8818	5820-11816
Sex														
Male	771 (15.00)	12.48-17.11	740 (15.23)	13.12-17.62	1003 (16.22)	14.18-18.50	970 (15.99)	14.00-18.21	1221 (15.20)	13.76-16.76	1006 (12.75)	11.18-14.50	1271 (14.41)	12.76-16.23
Female	4367(85.00)	82.89-87.52	4116 (84.77)	82.38-86.88	5179 (83.78)	81.50-85.82	5099 (84.01)	81.79-86.00	6815 (84.80)	83.24-86.24	6888 (87.25)	85.50-88.17	7547 (85.59)	83.77-87.24
Age, y														
<2	166 (3.23)	2.23-4.64	109 (2.24)	1.35-3.68	162 (2.62)	1.91-3.59	127 (2.09)	1.28-3.39	178 (2.22)	1.56-3.15	141 (1.79)	1.22-2.63	106 (1.20)	0.73-1.96
2-5	1534(29.86)	26.42-33.55	1762 (36.28)	32.49-40.24	1935 (31.30)	28.18-34.59	2127 (35.05)	30.93-39.40	2502 (31.14)	27.62-34.90	2077 (26.31)	22.96-29.95	1700 (19.28)	17.09-21.67
6-11	1158(22.54)	20.03-25.26	1128 (23.23)	20.53-26.16	1674 (27.08)	24.77-29.52	1622 (26.72)	24.19-29.42	1986 (24.72)	22.83-26.72	1815 (22.99)	20.72-25.44	1954 (22.16)	19.99-24.50
12-17	2280(44.37)	40.14-48.68	1858 (38.26)	34.12-42.36	2412 (39.01)	35.47-42.66	2194 (36.15)	31.91-40.62	3369 (41.92)	38.22-45.71	3860 (48.90)	44.63-53.22	5058 (57.36)	53.38-61.24
Primary payer														
Medicaid/Medicare	2621(51.03)	45.29-56.74	2770 (57.05)	52.51-61.48	3364 (54.41)	47.33-61.33	3874 (63.83)	57.88-69.39	4902 (61.00)	57.33-64.54	4169 (52.81)	46.09-59.44	4575 (51.88)	47.33-56.39
Private insurance	1551 (28.25)	22.86-34.34	1108 (22.82)	18.61-27.66	1362 (22.03)	18.85-25.59	1003 (16.53)	13.37-20.26	1546 (19.24)	15.85-23.16	1506 (19.08)	15.99-22.62	2256 (25.58)	18.87-33.69
Other	1065(20.72)	16.41-25.82	977 (20.12)	16.44-24.40	1456 (23.55)	17.16-31.42	1192 (19.64)	15.34-24.78	1588 (19.76)	16.08-24.04	2218 (28.10)	20.32-37.46	1988 (22.54)	16.03-30.72

States and examined important subgroup characteristics based on demographic and primary payer data.

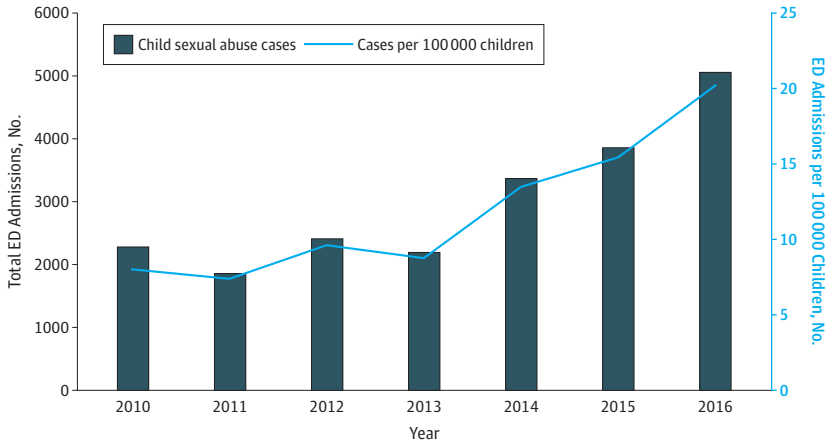
Methods | Data from Nationwide Emergency Department Sample of the Healthcare Cost and Utilization Project[4] between January 1, 2010, and December 31, 2016, were used for the analysis. The Nationwide Emergency Department Sample is based on a 20% stratified sample of hospital-based EDs and is the largest publicly available all-payer database of ED visits. This study's sample represented 78.2% of all ED admissions in the United States and was weighted to calculate national estimates. Data were analyzed from March 1 to March 31, 2019. The Healthcare Cost and Utilization Project comprises a deidentified limited data set that adheres to the privacy guidelines of the Health Insurance Portability and Accountability Act of 1996. In addition, a data use agreement was in place between the authors and the Agency for Healthcare Research and Quality, which manages the Nationwide Emergency Department Sample. Therefore, study approval from an institutional review board was not required.

We conducted the analysis in multiple steps. First, we created a dichotomous sexual abuse variable based on diagnosis codes from the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* and *International Statistical Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)*; values of 995.53 were assigned to codes from the *ICD-9-CM* and values of T74.22XA were assigned from the *ICD-10-CM*. Next, we calculated the number of all ED admissions for child sexual abuse by year. We then used national population data from the US Census Bureau to calculate the rates of sexual abuse per 100 000 children younger than 18 years. We also examined the frequency of all children admitted to the ED each year by sex, age, and primary payer. This last step enabled us to observe patterns among key subgroups of the sample.

Results | A total of 190 444 745 children were admitted to EDs in the United States between 2010 and 2016. Of those, 46 993 children were admitted for confirmed sexual abuse; 85.14% were girls, 44.75% were adolescents (aged 12-17 years), and 55.91% of the primary payers were insured by Medicaid or Medicare (**Table**). The number of ED admissions for child sexual abuse increased from 5138 in 2010 to 8818 in 2016. These data indicate an increase from 6.93 to 11.97 admissions per 100 000 children younger than 18 years (**Figure**). The increased rate of sexual abuse cases may be associated with the increase in the number of adolescents who were admitted to the ED during this period, from 2280 of 5138 patients (44.37%) in 2010 to 5058 of 8818 patients (57.36%) in 2016. These data indicate an increase from 8.02 to 20.20 ED admissions for sexual abuse per 100 000 adolescents in the United States.

Discussion | Between January 1, 2010, and December 31, 2016, the number of adolescents admitted to EDs across the United States for confirmed sexual abuse more than doubled. Our data did not allow us to identify factors that may have been associated with this increase. Several leading possibilities include the increased number of girls who were subjected to sex

Figure. Emergency Department Admissions for Child Sexual Abuse in the United States, 2010 to 2016



The bars indicate the number of emergency department (ED) admissions for child sexual abuse. The line indicates the rate of ED admissions for sexual abuse per 100 000 children.

trafficking[5] and the greater awareness and sensitivity of medical professionals regarding sexual assault. The increased rates of sexual abuse cases observed in this study are coupled with an ongoing concern about the quality of care and the treatment of sexually abused children who are admitted to EDs, which may not consistently adhere to the recommendations for care endorsed by the American Academy of Pediatrics and the Centers for Disease Control and Prevention.[6]

One limitation of this study was that the data did not provide information regarding the situational nature of sexual abuse; thus, we could not identify a clear association between ED admissions for sexual abuse and multiple risk factors. Despite this and other limitations, the study provides a unique epidemiologic surveillance contribution regarding the patterns and characteristics of child sexual abuse in the United States.

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Drafting of the manuscript: All authors.
Critical revision of the manuscript for important intellectual content: Carbone, Cross.
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Trends in the Use of Administrative Codes for Physical Abuse Hospitalizations

Administrative data from health care systems are important resources in the research of physical child abuse, such as tracking its incidence.[1] Validation studies of *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) for the identification of abuse cases among hospitalized children demonstrated reasonably good sensitivity (73.5%) and specificity (92.4%), despite that *ICD-9-CM* codes captured some cases in which abuse was only suspected.[2,3] The *ICD-9-CM* abuse codes (all *ICD* codes prefixed with 995.5) made no declaration for diagnostic certainty.[4] However, the US transition to *International Statistical Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)*, on October 1, 2015,[5] allowed for new designations of suspected abuse (all *ICD* codes prefixed with T76) and confirmed abuse (all *ICD* codes prefixed with T74), which may have consequences in coding practices and subsequently the ascertainment of abuse hospitalizations. Demonstrating stability in the use of administrative