Data Supplement

Details of studies on COVID-19, influenza vaccination, vaccine hesitancy, and sibling vaccination for children with developmental disabilities

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| Data Source (Time Period) | Relevant Population1 | Results | Reference |
| COVID-19 |
| Cross-sectional administrative healthcare data (Jan 2019-Nov 2020) | All ages,64,414,495 patients, 127,003 with intellectual disabilities (ID)  | COVID-19 incidence was 3.1% among people with ID and 0.9% among those without ID.Among those with COVID-19 and ID, 63.1% were hospitalized, 14.5% were admitted to the intensive care unit, and 8.2% died, compared to 29.1%, 6.3%, and 3.8% among those without ID, respectively.In analyses adjusting for age and comorbidities, odds of COVID-19 diagnosis were 2.6 times higher among people with ID compared to those without ID (95% confidence interval [CI]: 2.5, 2.7). The odds of mortality were 5.9 times higher among patients with COVID-19 who had ID compared with those without ID (95% CI: 5.3,6.6). | Gleason J, Ross W, Fossi A, Blonsky H, Tobias J, Stephens M. The Devastating Impact of Covid-19 on Individuals with Intellectual Disabilities in the United States. NEJM Catalyst Innovations in Care Delivery. 2021;2. |
| Cross-sectional administrative healthcare data (Jan 2020-Sept 2020) | All ages, 35,898,076 privately-insured patients  | Among people with COVID-19, adjusting for age and gender, odds of hospitalization was higher among people with specific developmental disabilities, i.e., ranging from 2.9 times higher for people with ADHD, conduct disorders, or hyperkinectic syndrome to 9.3 times higher for people with autism spectrum disorder plus ID or related conditions (ASD+ID). Odds of hospitalization longer than the median stay was 2.1 (learning disability) to 5.9 (ASD+ID) times higher. | Karpur A, Vasudevan V, Shih A, Frazier T. Brief Report: Impact of COVID-19 in Individuals with Autism Spectrum Disorders: Analysis of a National Private Claims Insurance Database. J Autism Dev Disord. 2021. |
| Cross-sectional administrative healthcare data (Apr 2020-Aug 2020) | All ages,467,773 privately-insured patients diagnosed with COVID-19 | Adjusted for age and gender, odds of COVID-19 mortality were 3.1 times higher for people with developmental disorders than those without. | FAIR Health WHI, Makary M. Risk Factors for COVID-19 Mortality among Privately Insured Patients: A Claims Data Analysis. 2020. |
| Cross-sectional administrative healthcare data, Premier Health Care Database (Mar 2020-Jan 2021) | Children ≤18 years, 43,465 hospital (emergency room or inpatient) patients with COVID-19 | Adjusting for underlying medical conditions, demographics, hospital and payer characteristics, and month of admission, children with neurodevelopmental disorders were 1.6 times as likely to be hospitalized with COVID-19 compared with children without neurodevelopmental disorders, with age-specific odds ratios of 1.9 (95% CI: 1.3, 2.7), 2.2 (95% CI: 1.6, 3.0), and 1.7 (95% CI: 1.5, 1.9) for children age 2-5 years, 6-11 years, and 12-18 years, respectively.The adjusted odds ratios for severe illness among children hospitalized for COVID-19 with neurodevelopmental disorders compared to children with other conditions were 0.6 (95% CI: 0.4, 0.9), 0.8 (95% CI: 0.5, 1.1), and 0.9 (95% CI: 0.8, 1.1) for children age 2-5 years, 6-11 years, and 12-18 years, respectively. | Kompaniyets L, Agathis NT, Nelson JM, Preston LE, Ko JY, Belay B, et al. Underlying medical conditions associated with severe COVID-19 illness among children. JAMA Network Open. 2021;4(6):e2111182-e2111182. |
| Cross-sectional administrative healthcare data (through May 2020) | 30,282 patients with COVID 19, including 916 children <18 years | Children with COVID-19 and intellectual and developmental disabilities (IDD) had 1.6% mortality and those without had 0.1% mortality. | Turk MA, Landes SD, Formica MK, Goss KD. Intellectual and developmental disability and COVID-19 case-fatality trends: TriNetX analysis. Disabil Health J. 2020;13(3):100942. |
| INFLUENZA VACCINATION  |
| Commercial insurance claims data (2006-2014) | Privately insured children (1-17 years); 184,460 with neurologic disorders and 4,697,486 general pediatric population | 34.6% children with neurologic disorders and 23.8% of children in the general pediatric population received influenza vaccination  | Havers FP, Fry AM, Peacock G, Chen J, Reed C. Influenza Vaccination Coverage in Children With Neurologic Disorders and Their Siblings, July 2006 to June 2014. Pediatr Infect Dis J. 2018;37(8):814-816. |
| Autism spectrum disorder (ASD) registry (2009-2010) | Children (3-17 years) treated at any of 5 health care systems, 8,325 with ASD, and 83,195 without ASD  | The percentage point difference between children aged 3-9 years with ASD compared to without ASD was -4.2 for influenza vaccination and -2.4 for other vaccinations, adjusting for sociodemographic characteristics, comorbidities, and enrollment characteristics; for children age 10-17 years the differences were -2.1 and -3.1, respectively | Cummings JR, Lynch FL, Rust KC, Coleman KJ, Madden JM, Owen-Smith AA, et al. Health Services Utilization Among Children With and Without Autism Spectrum Disorders. J Autism Dev Disord. 2016;46(3):910-920. |
| Vaccine Safety Datalink (children born 1995-2010) | Children aged 7 years as of September 30, 2015, 2,855 with ASD, 483,961 without ASD  | Rate ratio for full on-time vaccination of children with ASD compared to children without ASD was 0.87 (95% confidence interval [CI]: 0.85, 0.88), adjusting for maternal and child characteristics | Zerbo O, Modaressi S, Goddard K, Lewis E, Fireman BH, Daley MF, et al. Vaccination Patterns in Children After Autism Spectrum Disorder Diagnosis and in Their Younger Siblings. JAMA Pediatr. 2018;172(5):469-475. |
| VACCINE HESITANCY |
| Mail survey (2015-2017) | Parents of children ages 2-17 years, 129 with ASD, 42 with non-ASD developmental disorders (DDs), and 91 who were patients seen in well child care (no DDs) | 29.5% of parents of children with ASD expressed vaccine hesitancy, approximately twice as many as for parents of children with other DDs (14.3%) or no DDs (17.6%). | Sahni LC, Boom JA, Mire SS, Berry LN, Dowell LR, Minard CG, et al. Vaccine Hesitancy and Illness Perceptions: Comparing Parents of Children with Autism Spectrum Disorder to other Parent Groups. Child Health Care. 2020;49(4):385-402 |
| Online survey (2018) | Parents of 225 minor children with an ASD diagnosis who were participants in an ASD registry | 28.8% of parents of children with ASD were vaccine hesitant, with hesitancy more common among parents whose child had more severe ASD symptoms. | Goin-Kochel RP, Fombonne E, Mire SS, Minard CG, Sahni LC, Cunningham RM, et al. Beliefs about causes of autism and vaccine hesitancy among parents of children with autism spectrum disorder. Vaccine. 2020;38(40):6327-6333 |
| SIBLING VACCINATION |
| Commercial insurance claims data (2006-2014) | Privately insured children (1-17 years); 184,460 with neurologic disorders and 4,697,486 general pediatric populationPrivately insured children (1-17 years); 184,460 with neurologic disorders and 204,966 siblings | 28.1% of siblings of children with neurologic disorders received influenza vaccination, compared with 34.6% of children with neurologic disorders | Havers FP, Fry AM, Peacock G, Chen J, Reed C. Influenza Vaccination Coverage in Children With Neurologic Disorders and Their Siblings, July 2006 to June 2014. Pediatr Infect Dis J. 2018;37(8):814-816. |
| Vaccine Safety Datalink | Children aged 7 years as of September 30, 2015, 2031 siblings of children with ASD, 475,501 siblings of children without ASD.  | Rate ratios for full on-time vaccination of younger siblings of children with ASD compared to younger siblings of children without ASD were 0.86 (95% CI: 0.82, 0.89), 0.84 (95% CI: 0.79, 0.89), and 0.88 (95% CI: 0.84, 0.92) for children ages 1-11 months, 1-2 years, and 4-6 years, respectively.Parental vaccine refusal was >12% for younger siblings of children with ASD compared to <8% for younger siblings without ASD. | Zerbo O, Modaressi S, Goddard K, Lewis E, Fireman BH, Daley MF, et al. Vaccination Patterns in Children After Autism Spectrum Disorder Diagnosis and in Their Younger Siblings. JAMA Pediatr. 2018;172(5):469-475 |

1All studies based on individuals living in the United States.