

Appendix 1. List of ICD-10-CM diagnostic codes included in primary neurodevelopmental outcome

ICD-10-CM Code	Description
F80	Specific developmental disorders of speech and language
F80.0	Phonological disorder
F80.1	Expressive language disorder
F80.2	Mixed receptive-expressive language disorder
F80.4	Speech and language development delay due to hearing loss
F80.8	Other developmental disorders of speech and language
F80.81	Childhood onset fluency disorder
F80.82	Social pragmatic communication disorder
F80.89	Other developmental disorders of speech and language
F80.9	Developmental disorder of speech and language, unspecified
F81	Specific developmental disorders of scholastic skills
F81.0	Specific reading disorder
F81.2	Mathematics disorder
F81.8	Other developmental disorders of scholastic skills
F81.81	Disorder of written expression
F81.89	Other developmental disorders of scholastic skills
F81.9	Developmental disorder of scholastic skills, unspecified
F82	Specific developmental disorder of motor function
F83	Mixed specific developmental disorders
F84	Pervasive developmental disorders
F84.0	Autistic disorder
F84.2	Rett's syndrome
F84.3	Other childhood disintegrative disorder
F84.5	Asperger's syndrome
F84.8	Other pervasive developmental disorders
F84.9	Pervasive developmental disorder, unspecified
F88	Other disorders of psychological development
F89	Unspecified disorder of psychological development

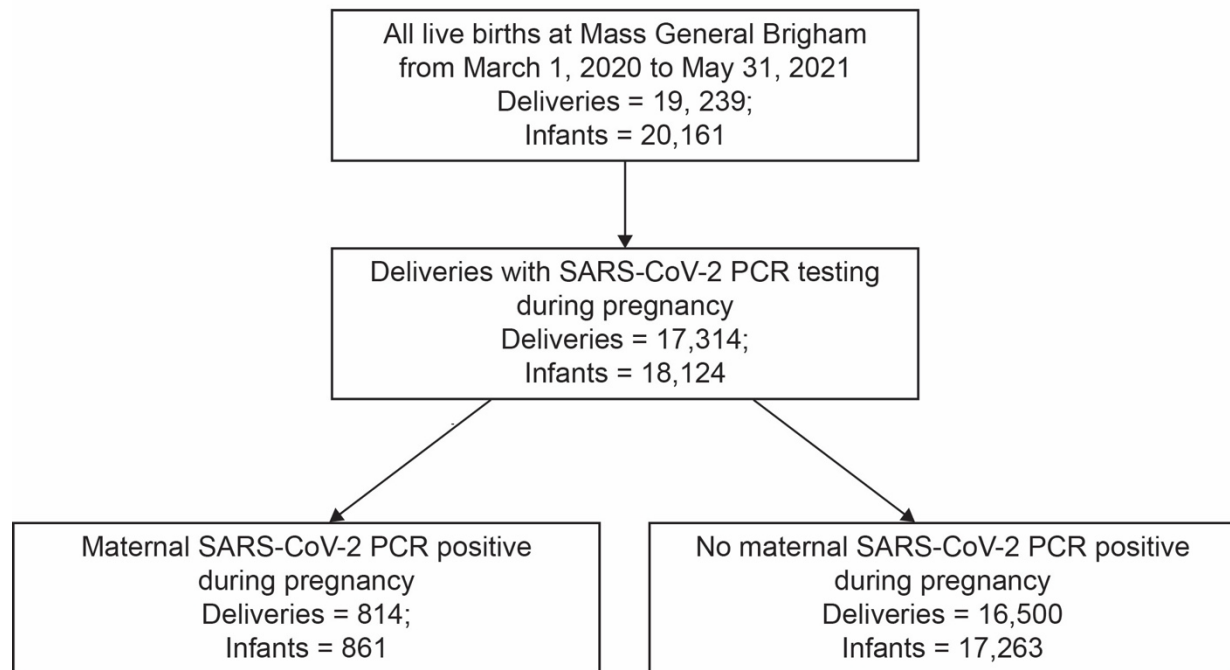
Shook L, Castro V, Ibanez-Pintor L, Perlis R.H, Edlow A.G. Neurodevelopmental outcomes of 3-year-old children exposed to maternal sars-cov-2 infection in utero. Obstet Gynecol 2025;146.

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Page 1 of 4

Appendix 2. Consort Diagram of Study Cohort



Number of infants exceed number of deliveries due to inclusion of multiple gestation (twin) pregnancies.

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Appendix 3. Association of Trimester of Maternal Sars-CoV-2 Infection with Neurodevelopmental Diagnosis by Age 3 Years, Female Offspring Only

Variable	N	Odds ratio	p
Maternal SARS-CoV-2 infection			
Unexposed (reference)	8435		Reference
First/second trimester exposure	149		1.12 (0.65, 1.84) 0.666
Third trimester exposure	266		1.27 (0.85, 1.85) 0.229
Maternal age (years)	8850		1.04 (1.02, 1.06) <0.001
Maternal race			
White	6116		Reference
Asian	865		0.97 (0.71, 1.30) 0.855
Black or African American	802		0.91 (0.67, 1.21) 0.526
Other	835		1.89 (1.40, 2.53) <0.001
Unknown	232		0.66 (0.37, 1.11) 0.140
Maternal ethnicity			
Not Hispanic	7334		Reference
Hispanic	1309		1.53 (1.16, 2.00) 0.002
Unavailable	207		1.61 (0.97, 2.55) 0.051
Maternal public insurance			
No	7112		Reference
Yes	1738		1.51 (1.22, 1.87) <0.001
Delivery hospital type			
Academic medical center	5222		Reference
Community hospital	3628		0.55 (0.46, 0.66) <0.001
Pre-term birth			
No	8037		Reference
Yes	813		2.39 (1.93, 2.95) <0.001
Vaccination status			
Unvaccinated	8214		Reference
Partially vaccinated	182		0.66 (0.31, 1.24) 0.239
Fully vaccinated	454		0.97 (0.65, 1.40) 0.876

Multivariable logistic regression model adjusting for maternal age, maternal race and ethnicity, maternal insurance type, delivery hospital type, and preterm birth in association with maternal SARS-CoV-2 positivity, grouped by trimester of infection. Only female offspring were included in this analysis (N=8,850). Forest plot shows odds ratios and 95% confidence intervals for each variable's association with neurodevelopmental diagnosis, adjusted for all other variables shown. Trimester of maternal SARS-CoV-2 infection is the primary exposure of interest; other variables represent potential confounders. (Male offspring results depicted in Figure 3)

Appendix 4. Association of Maternal Sars-CoV-2 Infection and Covariates with Neurodevelopmental Diagnosis by Age 3, Offspring with 36-month Follow-up Visit Only

Variable	N	Odds ratio	p
Maternal SARS-CoV-2 infection			
COVID negative	5535	Reference	
COVID positive	320	1.23 (0.95, 1.59)	0.11
Maternal age (years)	5855	1.02 (1.00, 1.03)	0.01
Maternal race			
White	4143	Reference	
Asian	578	0.92 (0.74, 1.15)	0.48
Black or African American	372	1.60 (1.26, 2.04)	<0.001
Other	635	1.84 (1.43, 2.36)	<0.001
Unknown	127	0.89 (0.57, 1.36)	0.60
Maternal ethnicity			
Not Hispanic	4788	Reference	
Hispanic	931	1.34 (1.06, 1.68)	0.01
Unavailable	136	1.17 (0.78, 1.73)	0.44
Maternal public insurance			
No	4669	Reference	
Yes	1186	1.49 (1.24, 1.79)	<0.001
Delivery hospital type			
Academic medical center	3515	Reference	
Community hospital	2340	0.62 (0.54, 0.71)	<0.001
Offspring sex			
Female	2784	Reference	
Male	3071	1.92 (1.69, 2.18)	<0.001
Pre-term birth			
No	5199	Reference	
Yes	656	2.02 (1.69, 2.41)	<0.001

Multivariable logistic regression model adjusting for maternal age, maternal race and ethnicity, maternal insurance type, delivery hospital type, offspring sex, and preterm birth in association with maternal SARS-CoV-2 positivity. Only offspring with a 36-month follow-up visit were included in this analysis (N=5,855). Forest plot shows odds ratios and 95% confidence intervals for each variable's association with neurodevelopmental diagnosis, adjusted for all other variables shown. Maternal SARS-CoV-2 infection is the primary exposure of interest; other variables represent potential confounders.

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Page 1 of 4