

## Supplementary Materials to: Two-year Neurodevelopmental Data for Preterm Infants Born Over an 11-year Period in England and Wales, 2008-2018: a Retrospective Study using the National Neonatal Research Database

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**Table S1: Univariate logistic regression analyses to predict whether an infant has a record of two-year neurodevelopmental assessment**

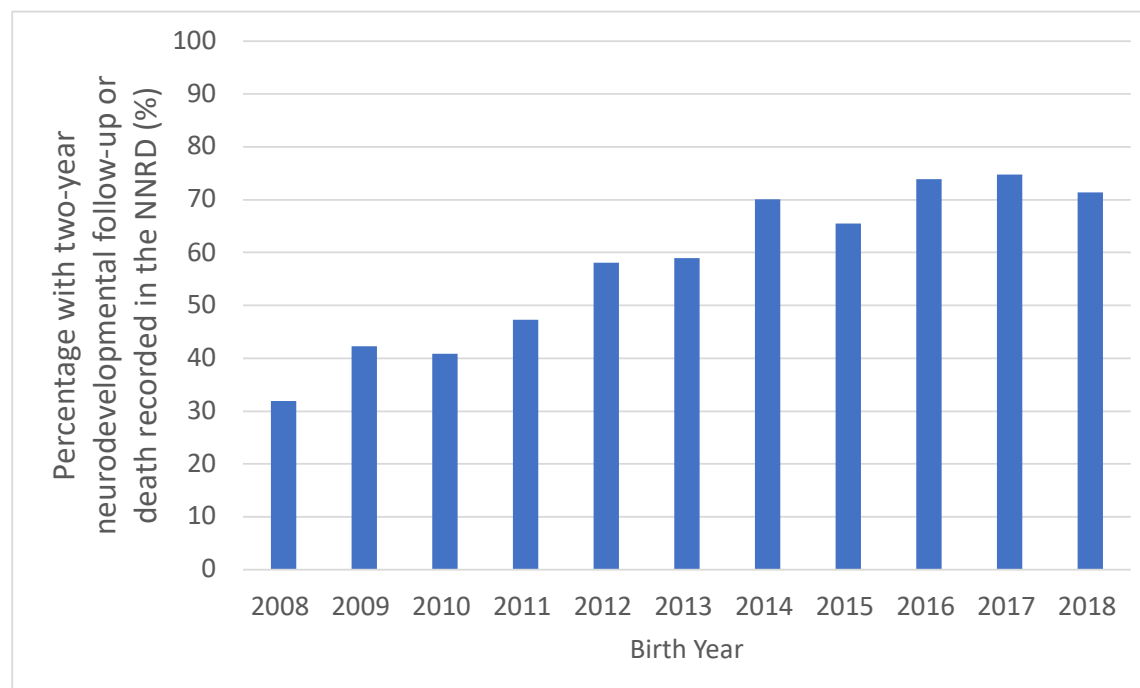
Variable		Number	Unadjusted odds ratio	Standard error	P-value	95% confidence interval	
Birth year		41,505	1.21	0.004	<0.001	1.20	1.21
Gestation at birth (weeks)		41,505	0.96	0.006	<0.001	0.95	0.97
Maternal age at birth		41,159	1.02	0.002	<0.001	1.02	1.03
IMD decile		38,433	1.02	0.004	<0.001	1.02	1.03
Number of neonatal units in which the infant received care (n = 41,505)	1	21,800					
	2	15,351	1.04	0.022	0.084	1.00	1.08
	3 or more	4,354	0.89	0.030	0.001	0.84	0.95
Level of neonatal unit at discharge (n = 41,505)	Special care baby unit (lowest)	5,711	0.64	0.020	<0.001	0.60	0.68
	Local neonatal unit	18,301	0.87	0.019	<0.001	0.84	0.91
	Neonatal intensive care unit (highest)	17,493					

Reference categories are in grey

**Table S2: Multiple logistic regression model to predict whether an infant has a record of two-year neurodevelopmental assessment (N = 38,243)**

Variable		Adjusted odd ratio	Standard error	P value	95% confidence interval	
Birth year		1.19	0.004	<0.001	1.19	1.21
Gestation at birth		0.95	0.007	<0.001	0.94	0.97
Maternal age at time of delivery		1.02	0.002	<0.001	1.01	1.02
Index of Multiple Deprivation (IMD) decile		1.03	0.004	<0.001	1.02	1.04
Number of different neonatal units to which the infant was admitted	1					
	2	1.00	0.026	0.919	0.95	1.06
	3 or more	0.85	0.034	<0.001	0.78	0.92
Level of unit of discharge	Special care baby unit (SCBU)	0.64	0.024	<0.001	0.59	0.69
	Local neonatal unit (LNU)	0.84	0.021	<0.001	0.80	0.88
	Neonatal intensive care unit (NICU)					

Reference categories in grey.

**Figure S1: Infants with a two-year neurodevelopmental record in the NNRD: whole cohort (<30 weeks), by birth year**

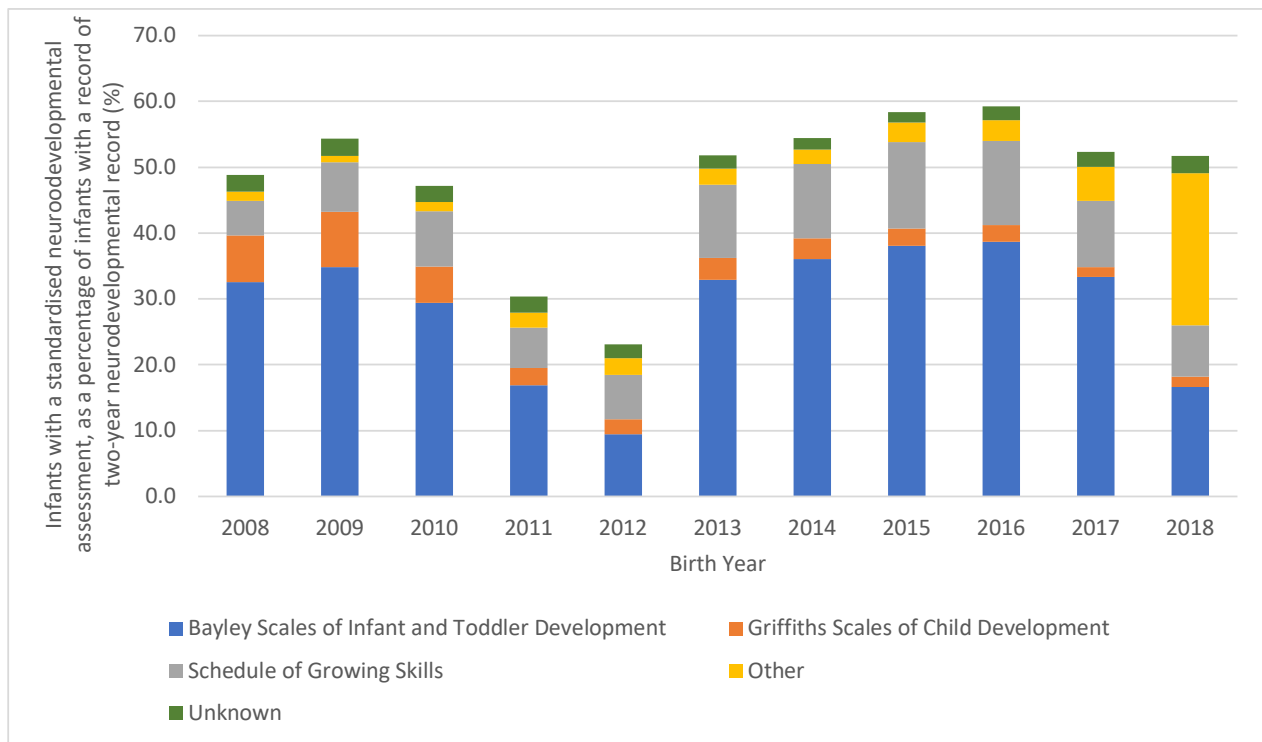
**Table S3: Percentage of infants with a two-year neurodevelopmental record by Operational Delivery Network**

Operational delivery network (coded)	Number of infants	Infants with two-year neurodevelopmental record, n (%)
1	3123	1640 (52.5)
2	2082	1125 (54.0)
3	5657	3055 (54.0)
4	3100	1683 (54.3)
5	3697	2059 (55.7)
6	2106	1175 (55.8)
7	4076	2284 (56.0)
8	2768	1630 (58.9)
9	2751	1628 (59.2)
10	3584	2272 (63.4)
11	1045	666 (63.7)
12	4140	2644 (63.9)
13	3376	2264 (67.1)
Total	41505	24125

**Table S4: Results of available two-year neurodevelopmental assessments**

<b>Question</b> (From TRPG/ SEND/ NNAP 2-year corrected age outcome form)	<b>Impairment recorded, n (%)*</b>	<b>Missing, n</b>
<b>Communication</b>		
Does this child have any difficulty with communication?	6207 (27)	887
Does this child have difficulty with speech (<10 words/signs)?	5964 (26)	1008
Does this child have difficulty with understanding outside of familiar context?	1640 (7.3)	1464
Does the child have <5 meaningful words, vocalisations or signs?	2966 (13)	1103
Is this child unable to understand words or signs?	882 (3.9)	1421
<b>Neuromotor</b>		
Is this child unable to walk without assistance?	1851 (7.9)	473
Is this child's gait non-fluent or abnormal reducing mobility?	2539 (11)	585
Does this child have difficulty with the use of both hands?	650 (2.8)	661
Does this child have any difficulty with the use of one hand?	991 (4.3)	700
Does this child have any difficulty walking?	2758 (12)	335
Is this child unstable or needs to be supported when sitting?	727 (3.1)	612
Is this child unable to sit?	482 (2.1)	546
Is this child unable to use hands (i.e. to feed)?	628 (2.7)	820
<b>Vision</b>		
Is this child blind or sees light only?	91 (0.4)	1373
Does this child have visual defect that is not fully correctable?	425 (1.9)	1588
Does this child have any visual problems (including squint)?	2219 (9.8)	1127
<b>Auditory</b>		
Does this child have a hearing impairment?	842 (3.8)	1347
Does this child have hearing impairment not correctable with aids?	186 (0.8)	1527
Does this child have hearing impairment corrected by aids?	313 (1.4)	1410
<b>Development</b>		
Is the child's development more than 12 months behind corrected age?	1402 (9.1)	3139
Is the child's development between 6 - 12 months behind corrected age?	2161 (13)	3139
Is the child's development between 3-6 months behind corrected age?	3093 (18)	3139

\*Percentage of non-missing

**Figure S2: Infants who had a standardised developmental assessment, and choice of assessment over time****Table S5: Principal neurodevelopmental outcomes by gestation for children with a record of neurodevelopmental assessment at two years, excluding those known to have died after neonatal discharge**

Gestation (weeks)	Developmental delay				Neuromotor: is this child unable to walk without assistance?		Communication: Does this child have <5 meaningful words, vocalisations or signs?		Vision: is this child blind or sees light only?		Auditory: Does this child have hearing impairment not correctable with aids?	
	Data available, n	Mild*, n (%)	Moderate*, n (%)	Severe*, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)
<24	544	126 (23)	105 (19)	123 (23)	596	107 (18)	572	179 (31)	570	9 (1.6)	566	16 (2.8)
24	1404	295 (21)	232 (17)	198 (14)	1542	216 (14)	1492	366 (25)	1471	11 (0.7)	1452	26 (1.8)
25	2007	343 (17)	284 (14)	186 (9.3)	2241	240 (11)	2189	408 (19)	2140	14 (0.7)	2132	21 (1.0)
26	2873	442 (15)	345 (12)	215 (7.5)	3255	267 (8.2)	3177	456 (14)	3146	16 (0.5)	3125	33 (1.1)
27	3714	547 (15)	347 (9.3)	217 (5.8)	4151	304 (7.3)	4060	472 (12)	4007	10 (0.2)	3995	33 (0.8)
28	4765	675 (14)	424 (8.9)	242 (5.1)	5382	341 (6.3)	5217	581 (11)	5166	12 (0.2)	5147	30 (0.6)
29	5336	675 (13)	424 (7.9)	221 (4.1)	6142	376 (6.1)	5972	504 (8.4)	5909	19 (0.3)	5838	27 (0.5)

\*Definitions for developmental delay: 'mild' (three to six months delay), 'moderate' (six to 12 months delay), 'severe' (over 12 months delay)

**Table S6: Principal neurodevelopmental outcomes by epoch for children with neurodevelopmental assessment at two years, excluding those known to have died after neonatal discharge**

Birth Epoch	Developmental delay				Neuromotor: is this child unable to walk without assistance?		Communication: Does this child have <5 meaningful words, vocalisations or signs?		Vision: is this child blind or sees light only?		Auditory: Does this child have hearing impairment not correctable with aids?	
	Data available, n	Mild*, n (%)	Moderate*, n (%)	Severe*, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)	Data available, n	Impairment, n (%)
2008 – 2010	3574	476 (13)	333 (9.3)	216 (6.0)	4337	373 (8.6)	3809	394 (10)	3811	12 (0.3)	3773	50 (1.3)
2011 – 2014	7814	1225 (16)	827 (11)	520 (6.7)	9427	707 (7.5)	8459	1027 (12)	8293	37 (0.4)	8253	61 (0.7)
2015 – 2018	9295	1392 (15)	1001 (11)	666 (7.2)	11421	771 (6.8)	10411	1545 (15)	10305	42 (0.4)	10229	75 (0.7)

\*Definitions for developmental delay: 'mild' (three to six months delay), 'moderate' (six to 12 months delay), 'severe' (over 12 months delay)