

Supplemental Table 1 ICD10 FILTER CODES to IDENTIFY LIFELIMITING DIAGNOSES IN CHILDREN & YOUNG PEOPLE

A	B	C	D	E	F	G	G	H	I	J
A17 A81.0 A81.1	B20-B24	C00-C97	D33 D43 D44.4 D48 D56.1 D61.0 D61.9 D70 D76.1 D81 D82.1 D83 D89.1	E31.0 E34.8 E70.2 E71 E72 E74 E75 E76 E77 E79.1 E83.0 E84 E88.0 E88.1	F80.3 F84.2	G10 G11.1 G11.3 G12 G20 G23.0 G23.8 G31.8 G31.9 G35 G40.4 G40.5 G60.0 G60.1 G70.2 G70.9 G71.0 G71.1 G71.2 G71.3 G80.0 G80.8	G82.3 G82.4 G82.5 G93.4 G93.6 G93.7	H11.1 H49.8 H35.5	I21 I27.0 I42 I61.3 I81	J84.1 J96 J98.4
K	L	N	P	Q	Q	Q	Q	Q	T	Z
K55.0 K55.9 K72 K74 K76.5 K86.8	M31.3 M32.1 M89.5	N17 N18 N19 N25.8	P10.1 P11.2 P21.0 P28.5 P29.0 P29.3 P35.0 P35.1 P35.8 P37.1	Q00.0 Q01 Q03.1 Q03.9 Q04.0 Q04.2 Q04.3 Q04.4 Q04.6 Q04.9	Q21.8 Q22.0 Q22.1 Q22.4 Q22.5 Q22.6 Q23.0 Q23.4 Q23.9 Q25.4	Q39.6 Q41.0 Q41.9 Q43.7 Q44.2 Q74.8 Q44.5 Q44.7 Q60.1 Q60.6	Q78.0 Q78.5 Q79.2 Q79.3 Q80.4 Q81 Q82.1 Q82.4 Q85.8 Q86.0	Q93.2 Q93.3 Q93.4 Q93.5 Q93.8 Q95.2	T86.0 T86.2	Z51.5

			P52.4	Q07.0	Q25.6	Q61.4	Q87.0			
			P52.5	Q20.0	Q26.2	Q61.9	Q87.1			
			P52.9	Q20.3	Q26.4	Q64.2	Q87.2			
			P83.2	Q20.4	Q26.8	Q74.3	Q87.8			
			P91.2	Q20.6	Q28.2	Q75.0	Q91			
			P91.6	Q20.8	Q32.1	Q77.2	Q92.0			
			P96.0	Q21.3	Q33.6	Q77.3	Q92.1			
				Q23.2		Q77.4	Q92.4			
							Q92.7			

Supplemental Table 2 Comparison of descriptive statistics between those PICU admissions which did and did not Link to the HES

	Linked		Linkage unsuccessful		$\chi^2$	P value
<b>Number</b>	154,667	99.2	1316	0.8		
<b>Age Category</b>					25.5	<0.001
<1 year	72,170	99.3	533	0.7		
1-4 years	39,571	99.1	347	0.9		
5-10 years	20,448	99.0	214	1.0		
11-15 years	19,003	99.0	184	1.0		
16+	3,467	98.9	38	1.1		
missing	8	100.0	0	0.0		
<b>Sex</b>					0.43	0.51
Male	87,686	99.2	726	0.8		
Female	66,933	99.1	575	0.9		
missing	48		15			
<b>Ethnicity</b>					2.6	0.10
Non South Asian	136,670	99.2	1,144	0.8		
South Asian	17,997	99.1	172	0.9		
<b>Deprivation Category</b>					148	<0.001
Category 1 (least deprived)	21,421	99.3	152	0.7		
Category 2	21,816	98.8	268	1.2		
Category 3	26,341	98.9	284	1.1		
Category 4	34,498	99.2	272	0.8		
Category 5 (most deprived)	49,538	99.5	230	0.5		
missing	1,053	90.5	110	9.5		
<b>Diagnostic Group (reason for PICU admission)</b>					184	<0.001
Neurological	17,270	99.0	181	1.0		
Cardiac	44,767	99.4	268	0.6		
Respiratory	42,230	99.3	279	0.7		
Oncology	5,190	98.4	84	1.6		
Infection	8,014	99.1	73	0.9		
Musculoskeletal	5,736	98.9	61	1.1		
Gastrointestinal	10,019	98.9	112	1.1		
Other	8,140	98.7	109	1.3		
Blood and lymph	1,456	98.3	25	1.7		
Trauma	4,581	98.3	77	1.7		
Endocrine/metabolic	3,878	99.2	32	0.8		
Multisystem	427	99.5	2	0.5		
Body wall and cavities						
	2,959	99.6	13	0.4		
<b>Risk of Mortality (PIM 2)</b>					8.8	0.07
<1%	48,957	99.2	415	0.8		
1-<5%	74,212	99.1	668	0.9		
5-<15%	24,727	99.3	185	0.7		
15-<30%	4,270	99.4	25	0.6		
>30%	2,501	99.1	23	0.9		
<b>LOS PICU (days)</b>					10.5	0.11
<1	45,246	99.1	426	0.9		
1 to <3	49,285	99.2	413	0.8		

3 to <7	34,122	99.2	273	0.8		
7 to <14	15,957	99.3	120	0.7		
14 to <28	6,603	99.3	48	0.7		
28+	3,412	99.0	36	1.0		
missing	42		0			
<b>Type of PICU admission</b>					45.5	<0.001
Planned - after surgery	49749	99.2	398	0.79		
Unplanned after surgery	7688	99.2	64	0.83		
Planned other	10900	98.6	155	1.40		
Unplanned	86050	99.2	696	0.80		
Not known	280		3			
<b>No. PICU admissions</b>					120	<0.001
one admission	77,426	98.9	837	1.1		
2 admissions	28,850	99.2	238	0.8		
3 admissions	15,726	99.4	90	0.6		
4+ admissions	32,665	99.5	151	0.5		
<b>Year of PICU admission</b>					365	<0.001
2004	12,293	98.0	245	2.0		
2005	12,326	98.5	193	1.5		
2006	12,634	98.8	150	1.2		
2007	13,275	99.4	84	0.6		
2008	13,462	99.5	68	0.5		
2009	14,023	99.3	100	0.7		
2010	14,185	99.3	102	0.7		
2011	14,006	99.4	90	0.6		
2012	14,597	99.2	111	0.8		
2013	14,865	99.6	57	0.4		
2014	14,973	99.4	90	0.6		
2015	4,028	99.4	26	0.6		

Supplemental Table 3a Random Effects Logistic Regression Model for Death in PICU (LLC only)

[n= 88,356, group = 35, wald chi2=5603, sigma\_u=0.21, rho=0.02]

	Odds Ratio	95% Confidence Intervals		p-value
<b>Age Category</b>				
<1 year	REF			
1-4 years	0.85	0.78	0.92	<0.001
5-10 years	0.93	0.84	1.03	0.17
11-15 years	1.03	0.92	1.15	0.66
16+	1.37	1.12	1.67	0.002
<b>Sex</b>				
Male	REF			
Female	1.11	1.04	1.18	0.001
<b>Ethnicity</b>				
Non South Asian	REF			
South Asian	1.30	1.20	1.41	<0.001
<b>Deprivation Category</b>				
Category 1 (least deprived)	REF			
Category 2	1.00	0.88	1.13	0.96
Category 3	1.02	0.90	1.14	0.80
Category 4	1.03	0.92	1.15	0.59
Category 5 (most deprived)	1.03	0.92	1.15	0.60
<b>Diagnostic Group (reason for PICU admission)</b>				
Neurological	1.10	0.97	1.24	0.141
Cardiac	1.16	1.05	1.28	0.003
Respiratory	REF			
Oncology	1.91	1.62	2.25	<0.001
Infection	2.06	1.82	2.35	<0.001
Musculoskeletal	0.74	0.54	1.00	0.05
Gastrointestinal	1.30	1.12	1.51	<0.001
Other	1.07	0.90	1.27	0.43
Blood and lymph	2.54	1.98	3.25	<0.001
Trauma	1.13	0.73	1.74	0.58
Endocrine/metabolic	2.38	2.05	2.76	<0.001
Multisystem	0.61	0.30	1.25	0.18
Body wall and cavities	0.91	0.70	1.17	0.45
<b>Risk of Mortality (PIM 2)</b>				
<1%	REF			
1-<5%	3.86	3.29	4.53	<0.001
5-<15%	8.62	7.28	10.21	<0.001
15-<30%	18.49	15.35	22.29	<0.001
>30%	76.18	62.76	92.48	<0.001
<b>LOS PICU (days)</b>				
<1	1.47	1.33	1.62	<0.001
1 to <3	REF			
3 to <7	0.90	0.81	0.99	0.03
7 to <14	1.16	1.04	1.29	0.01

14 to <28	2.12	1.89	2.37	<0.001
>28	3.96	3.50	4.49	<0.001
<b>Type of PICU admission</b>				
Planned - after surgery	REF			
Unplanned after surgery	1.19	0.98	1.45	0.07
Planned other	1.37	1.17	1.59	<0.001
Unplanned	1.64	1.47	1.83	<0.001
Not known	1.40	0.60	3.29	0.44
<b>Year of Admission</b>	0.97	0.96	0.98	<0.001

Supplemental Table 3b Random Effects Logistic Regression Model for Death in PICU (non LLC only)

[n= 65,132, group = 35, wald chi2=4148, sigma\_u=0.28, rho=0.02]

	Odds Ratio	95% Confidence Intervals		p-value
<b>Age Category</b>				
<1 year	REF			
1-4 years	0.66	0.56	0.77	<0.001
5-10 years	0.96	0.79	1.17	0.69
11-15 years	0.99	0.82	1.20	0.90
16+	1.08	0.60	1.92	0.80
<b>Sex</b>				
Male	REF			
Female	1.06	0.94	1.20	0.31
<b>Ethnicity</b>				
Non South Asian	REF			
South Asian	1.06	0.88	1.27	0.55
<b>Deprivation Category</b>				
Category 1 (least deprived)	REF			
Category 2	1.08	0.85	1.37	0.52
Category 3	1.02	0.81	1.28	0.88
Category 4	1.17	0.94	1.44	0.15
Category 5 (most deprived)	1.17	0.96	1.43	0.13
<b>Diagnostic Group (reason for PICU admission)</b>				
Neurological	2.19	1.79	2.69	<0.001
Cardiac	1.77	1.42	2.21	<0.001
Respiratory	REF			
Oncology	2.12	0.91	4.91	<0.001
Infection	2.05	1.63	2.58	<0.001
Musculoskeletal	0.71	0.24	2.11	0.08
Gastrointestinal	1.82	1.39	2.39	<0.001
Other	1.65	1.25	2.19	0.54
Blood and lymph	1.77	1.00	3.12	<0.001
Trauma	2.37	1.84	3.06	<0.001
Endocrine/metabolic	1.77	1.26	2.50	0.05
Multisystem	1.00			
Body wall and cavities	1.13	0.62	2.05	0.001
<b>Risk of Mortality (PIM 2)</b>				
<1%	REF			
1-<5%	7.14	4.56	11.18	<0.001
5-<15%	34.61	21.95	54.57	<0.001
15-<30%	183.20	113.88	294.69	<0.001
>30%	1530.22	954.72	2452.64	<0.001
<b>LOS PICU (days)</b>				
<1	1.66	1.43	1.93	<0.001
1 to <3	REF			
3 to <7	0.74	0.63	0.88	0.001
7 to <14	0.87	0.70	1.09	0.22
14 to <28	1.56	1.15	2.12	0.004

>28	4.07	2.75	6.02	<0.001
<b>Type of PICU admission</b>				
Planned - after surgery	REF			
Unplanned after surgery	2.04	1.36	3.08	0.001
Planned other	1.25	0.80	1.96	0.321
Unplanned	2.11	1.54	2.88	<0.001
Not known	1.83	0.32	10.33	0.494
<b>Year of Admission</b>	0.95	0.94	0.97	<0.001