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Appendix 1 Diagnoses accounting for 80% of in-hospital deaths

Cases in the NHMD with data-year 2005–06 and satisfying study inclusion criteria were summarised according to the frequency of deaths in hospital, by three character ICD-10-AM code. The 68 codes listed in Table A1 are the ones with the highest frequency of deaths. Between them, the 68 codes were present in less than 20% of records but 80% of deaths.

Table A1.1: Principal diagnosis codes occurring most frequently among in-hospital deaths in 2005–06

ICD code	Description
A41	Other sepsis
C15	Malignant neoplasm of oesophagus
C16	Malignant neoplasm of stomach
C18	Malignant neoplasm of colon
C20	Malignant neoplasm of rectum
C22	Malignant neoplasm of liver and intrahepatic bile ducts
C25	Malignant neoplasm of pancreas
C34	Malignant neoplasm of bronchus and lung
C45	Mesothelioma
C50	Malignant neoplasm of breast
C56	Malignant neoplasm of ovary
C61	Malignant neoplasm of prostate
C64	Malignant neoplasm of kidney, except renal pelvis
C67	Malignant neoplasm of bladder
C71	Malignant neoplasm of brain
C78	Secondary malignant neoplasm of respiratory and digestive organs
C79	Secondary malignant neoplasm of other sites
C80	Malignant neoplasm without specification of site
C83	Diffuse non-Hodgkin lymphoma
C85	Other and unspecified types of non-Hodgkin lymphoma
C90	Multiple myeloma and malignant plasma cell neoplasms
C91	Lymphoid leukaemia
C92	Myeloid leukaemia
E11	Type 2 diabetes mellitus
E86	Volume depletion
E87	Other disorders of fluid, electrolyte and acid-base balance
G93	Other disorders of brain
I20	Angina pectoris
I21	Acute myocardial infarction
I25	Chronic ischaemic heart disease
I26	Pulmonary embolism
I46	Cardiac arrest
I48	Atrial fibrillation and flutter
I49	Other cardiac arrhythmias
I50	Heart failure
I60	Subarachnoid haemorrhage
I61	Intracerebral haemorrhage
I62	Other nontraumatic intracranial haemorrhage
I63	Cerebral infarction
I64	Stroke, not specified as haemorrhage or infarction
I70	Atherosclerosis
I71	Aortic aneurysm and dissection
J15	Bacterial pneumonia, not elsewhere classified
J18	Pneumonia, organism unspecified
J22	Unspecified acute lower respiratory infection
J44	Other chronic obstructive pulmonary disease
J69	Pneumonitis due to solids and liquids
J84	Other interstitial pulmonary diseases
J90	Pleural effusion, not elsewhere classified
J96	Respiratory failure, not elsewhere classified
K52	Other noninfective gastroenteritis and colitis

(continued)

Table A1.1 (continued): Principal diagnosis codes occurring most frequently among in-hospital deaths in 2005–06

ICD code	Description
K55	Vascular disorders of intestine
K56	Paralytic ileus and intestinal obstruction without hernia
K57	Diverticular disease of intestine
K63	Other diseases of intestine
K70	Alcoholic liver disease
K72	Hepatic failure, not elsewhere classified
K85	Acute pancreatitis
K92	Other diseases of digestive system
L03	Cellulitis
N17	Acute renal failure
N18	Chronic renal failure
N39	Other disorders of urinary system
R55	Syncope and collapse
S06	Intracranial injury
S32	Fracture of lumbar spine and pelvis
S72	Fracture of femur
T81	Complications of procedures, not elsewhere classified

Appendix 2 Summary tables of HSMRs in 2005–06

Table A2.1: Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group B1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
B1001	11443.59	0	10.64	0	3.97	0	19.19	0.00 (0.0–34.5)	0.00 (0.0 92.4)	0.00 (0.0–19.1)	1	1	1
B1002	18551.28	3	11.81	3	2.97	6	13.95	25.41 (5.1–74.2)	101.10 (20.3 295.4)	43.01 (15.7–93.6)	2	23	5
B1003	11878.78	30	85.26	3	12.03	33	100.68	35.18 (23.7–50.2)	24.94 (5.0 72.9)	32.78 (22.6–46.0)	3	3	2
B1004	12964.14	42	113.65	6	24.16	48	143.81	36.95 (26.6–50.0)	24.83 (9.1 54.0)	33.38 (24.6–44.3)	4	2	3
B1005	20944.06	68	181.55	25	59.55	93	241.34	37.45 (29.1–47.5)	41.98 (27.2 62.0)	38.53 (31.1–47.2)	5	4	4
B1006	15766.76	57	90.70	13	17.97	70	111.83	62.85 (47.6–81.4)	72.36 (38.5 123.8)	62.60 (48.8–79.1)	6	12	6
B1007	18426.22	79	116.55	18	23.41	97	140.31	67.78 (53.7–84.5)	76.89 (45.5 121.5)	69.13 (56.1–84.3)	7	15	7
B1008	11577.67	52	68.82	13	19.14	65	90.25	75.56 (56.4–99.1)	67.90 (36.1 116.1)	72.02 (55.6–91.8)	8	11	8
B1009	17108.93	131	162.84	33	53.30	164	224.40	80.45 (67.3–95.5)	61.91 (42.6 86.9)	73.08 (62.3–85.2)	9	8	9
B1010	17342.59	78	96.47	12	20.54	90	116.39	80.85 (63.9–100.9)	58.42 (30.2 102.1)	77.32 (62.2–95.0)	10	7	11
B1011	12139.77	83	98.78	12	16.51	95	115.44	84.02 (66.9–104.2)	72.70 (37.5 127.0)	82.29 (66.6–100.6)	11	13	12
B1012	17108.45	149	174.22	23	30.21	172	202.48	85.52 (72.3–100.4)	76.12 (48.2 114.2)	84.95 (72.7–98.6)	12	14	14
B1013	17052.74	95	109.79	12	24.08	107	142.61	86.53 (70.0–105.8)	49.84 (25.7 87.1)	75.03 (61.5–90.7)	13	5	10
B1014	11474.29	152	170.61	38	34.13	190	202.80	89.09 (75.5–104.4)	111.35 (78.8 152.8)	93.69 (80.8–108.0)	14	24	19
B1015	14171.88	41	45.75	17	20.16	58	65.28	89.62 (64.3–121.6)	84.34 (49.1 135.0)	88.84 (67.5–114.9)	15	17	17

(continued)

Table A2.1 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group B1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
B1016	15302.6	170	189.17	26	39.80	196	232.21	89.86 (76.9–104.4)	65.33 (42.7 95.7)	84.41 (73.0–97.1)	16	10	13
B1017	18521.34	114	125.39	22	23.92	136	153.82	90.91 (75.0–109.2)	91.96 (57.6 139.2)	88.41 (74.2–104.6)	17	21	16
B1018	14139.55	117	126.53	18	22.73	135	149.04	92.47 (76.5–110.8)	79.18 (46.9 125.2)	90.58 (75.9–107.2)	18	16	18
B1019	21415.35	183	194.15	32	49.00	215	247.50	94.26 (81.1–108.9)	65.30 (44.7 92.2)	86.87 (75.6–99.3)	19	9	15
B1020	18994.63	173	181.04	33	33.13	206	218.70	95.56 (81.8–110.9)	99.60 (68.5 139.9)	94.19 (81.8–108.0)	20	22	20
B1021	16109.59	184	190.68	15	27.32	199	204.97	96.50 (83.1–111.5)	54.90 (30.7 90.6)	97.09 (84.1–111.6)	21	6	21
B1022	16485.85	143	144.46	35	30.60	178	172.18	98.99 (83.4–116.6)	114.38 (79.7 159.1)	103.38 (88.8–119.7)	22	25	22
B1023	17483.18	356	349.79	69	76.51	425	395.87	101.78 (91.5–112.9)	90.19 (70.2 114.1)	107.36 (97.4–118.1)	23	19	23
B1024	14126.42	189	165.65	25	27.49	214	185.28	114.10 (98.4–131.6)	90.95 (58.8 134.3)	115.50 (100.5–132.1)	24	20	25
B1025	14412.28	107	90.50	16	18.25	123	111.06	118.23 (96.9–142.9)	87.65 (50.1 142.4)	110.75 (92.0–132.1)	25	18	24

Table A2.2: Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group C2

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
C2001	2841.45	0	2.64	0	1.06	0	5.08	0.00 (0–139.2)	0.00 (0–345.5)	0.00 (0–72.2)	2	3	1
C2002	3206.87	0	0.03	0	0.71	0	0.51	0.00 (0–11735.7)	0.00 (0–519.2)	0.00 (0–715.5)	1	4	2
C2003	5783.27	0	2.07	0	0.91	0	3.17	0.00 (0–177.4)	0.00 (0–401.8)	0.00 (0–115.8)	3	2	3
C2004	4715.84	3	11.35	0	3.10	3	14.97	26.42 (5.3–77.2)	0.00 (0–118.3)	20.04 (4.0–58.5)	4	1	4
C2005	6937.37	19	61.39	2	10.77	21	71.07	30.95 (18.6–48.3)	18.58 (2.1–67.1)	29.55 (18.3–45.2)	5	6	5
C2006	2381.76	6	12.67	2	4.87	8	16.33	47.36 (17.3–103.1)	41.11 (4.6–148.4)	48.98 (21.1–96.5)	6	12	7
C2007	2561.47	11	20.54	3	8.92	14	28.46	53.56 (26.7–95.8)	33.65 (6.8–98.3)	49.19 (26.9–82.5)	7	9	9
C2008	4232.04	50	85.35	8	22.76	58	118.13	58.58 (43.5–77.2)	35.15 (15.1–69.3)	49.10 (37.3–63.5)	8	10	8
C2009	5069.51	31	51.46	1	11.26	32	67.10	60.24 (40.9–85.5)	8.88 (0.1–49.4)	47.69 (32.6–67.3)	9	5	6
C2010	3273.44	7	11.54	7	4.69	14	17.09	60.64 (24.3–125.0)	149.25 (59.8–307.5)	81.93 (44.8–137.5)	10	52	20
C2011	5089.75	29	44.24	5	8.08	34	54.19	65.55 (43.9–94.1)	61.91 (20.0–144.5)	62.74 (43.4–87.7)	11	18	10
C2012	2356.46	10	14.79	4	5.54	14	20.55	67.62 (32.4–124.4)	72.21 (19.4–184.9)	68.12 (37.2–114.3)	12	21	12
C2013	4569.78	29	42.39	10	8.26	39	52.69	68.41 (45.8–98.3)	121.09 (58.0–222.7)	74.02 (52.6–101.2)	13	45	15
C2014	2336.8	17	24.50	5	5.04	22	28.56	69.39 (40.4–111.1)	99.20 (32.0–231.5)	77.04 (48.3–116.7)	14	34	16
C2015	5613.38	56	78.53	6	10.49	62	92.87	71.31 (53.9–92.6)	57.19 (20.9–124.5)	66.76 (51.2–85.6)	15	16	11
C2016	4885.57	39	52.73	8	10.44	47	66.80	73.96 (52.6–101.1)	76.63 (33.0–151.0)	70.36 (51.7–93.6)	16	24	13
C2017	2322.79	21	27.92	5	6.99	26	35.29	75.22 (46.5–115.0)	71.58 (23.1–167.0)	73.68 (48.1–108.0)	17	20	14
C2018	2499.07	16	20.90	5	3.81	21	25.14	76.55 (43.7–124.3)	131.39 (42.3–306.6)	83.52 (51.7–127.7)	18	48	21
C2019	3244.37	34	41.94	4	7.61	38	41.96	81.06 (56.1–113.3)	52.56 (14.1–134.6)	90.56 (64.1–124.3)	19	14	24
C2020	2744.83	11	12.65	2	3.80	13	16.85	86.94 (43.3–155.6)	52.57 (5.9–189.8)	77.13 (41.0–131.9)	20	15	17

(continued)

Table A2.2 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group C2

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
C2021	2123.94	13	14.83	10	6.62	23	21.65	87.66 (46.6–149.9)	151.14 (72.4–278.0)	106.25 (67.3–159.4)	21	53	32
C2022	4969.4	35	39.52	5	11.15	40	50.62	88.57 (61.7–123.2)	44.83 (14.4–104.6)	79.02 (56.4–107.6)	22	13	19
C2023	5284.65	44	49.21	9	12.22	53	63.35	89.41 (65.0–120.0)	73.67 (33.6–139.9)	83.67 (62.7–109.4)	23	23	22
C2024	3327.35	27	28.09	3	7.64	30	38.65	96.11 (63.3–139.8)	39.25 (7.9–114.7)	77.61 (52.4–110.8)	24	11	18
C2025	3324.38	28	28.29	6	6.85	34	37.66	98.98 (65.8–143.1)	87.55 (32.0–190.6)	90.29 (62.5–126.2)	25	28	23
C2026	2665.88	37	36.85	7	6.87	44	44.82	100.42 (70.7–138.4)	101.88 (40.8–209.9)	98.17 (71.3–131.8)	26	35	27
C2027	2405.12	35	34.84	7	5.56	42	37.80	100.45 (70.0–139.7)	125.88 (50.4–259.4)	111.11 (80.1–150.2)	27	47	34
C2028	3083.97	30	29.51	5	8.00	35	36.38	101.68 (68.6–145.2)	62.47 (20.1–145.8)	96.20 (67.0–133.8)	28	19	25
C2029	3920.41	52	49.82	7	7.94	59	51.74	104.38 (77.9–136.9)	88.19 (35.3–181.7)	114.03 (86.8–147.1)	29	30	38
C2030	4165.54	35	33.34	8	9.70	43	44.27	104.98 (73.1–146.0)	82.49 (35.5–162.5)	97.14 (70.3–130.9)	30	25	26
C2031	2288.87	15	14.27	7	4.08	22	19.51	105.08 (58.8–173.3)	171.77 (68.8–353.9)	112.78 (70.7–170.8)	31	56	36
C2032	4269.18	63	59.33	14	14.32	77	68.07	106.19 (81.6–135.9)	97.78 (53.4–164.1)	113.12 (89.3–141.4)	32	33	37
C2033	2917.91	29	27.19	12	8.15	41	34.80	106.67 (71.4–153.2)	147.24 (76.0–257.2)	117.83 (84.5–159.9)	33	51	42
C2034	2423.85	31	28.41	5	6.83	36	34.51	109.13 (74.1–154.9)	73.23 (23.6–170.9)	104.32 (73.1–144.4)	34	22	29
C2035	2381.69	34	31.03	5	5.69	39	37.19	109.59 (75.9–153.1)	87.88 (28.3–205.1)	104.86 (74.6–143.3)	35	29	31
C2036	3878.93	45	40.39	9	10.43	54	51.54	111.40 (81.2–149.1)	86.27 (39.4–163.8)	104.78 (78.7–136.7)	36	27	30
C2037	3079.27	49	43.18	9	7.55	58	50.09	113.49 (84.0–150.0)	119.16 (54.4–226.2)	115.78 (87.9–149.7)	37	43	39
C2038	3731.99	28	24.02	10	10.23	38	35.59	116.59 (77.5–168.5)	97.72 (46.8–179.7)	106.78 (75.6–146.6)	38	32	33
C2039	2419.27	20	16.67	1	4.53	21	20.78	120.00 (73.3–185.3)	22.06 (0.3–122.8)	101.07 (62.5–154.5)	39	7	28
C2040	4793.88	40	33.00	10	8.86	50	44.34	121.19 (86.6–165.0)	112.81 (54.0–207.5)	112.76 (83.7–148.7)	40	39	35
C2041	2354.82	26	21.28	13	6.94	39	27.60	122.17 (79.8–179.0)	187.44 (99.7–320.6)	141.33 (100.5–193.2)	41	58	54

(continued)

Table A2.2 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group C2

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
C2042	2211.37	17	13.53	7	4.39	24	18.30	125.67 (73.2–201.2)	159.51 (63.9–328.7)	131.18 (84.0–195.2)	42	54	50
C2043	2223.58	52	41.06	20	7.76	72	46.41	126.64 (94.6–166.1)	257.72 (157.4–398.1)	155.13 (121.4–195.4)	43	60	57
C2044	2883.28	36	28.36	8	7.01	44	37.91	126.94 (88.9–175.7)	114.13 (49.1–224.9)	116.08 (84.3–155.8)	44	41	40
C2045	4189.45	41	31.33	13	9.31	54	43.73	130.86 (93.9–177.5)	139.65 (74.3–238.8)	123.49 (92.8–161.1)	45	49	46
C2046	2464.02	24	18.25	7	6.51	31	24.44	131.54 (84.3–195.7)	107.59 (43.1–221.7)	126.85 (86.2–180.1)	46	37	47
C2047	2547.32	32	23.98	7	8.45	39	32.40	133.45 (91.3–188.4)	82.83 (33.2–170.7)	120.35 (85.6–164.5)	47	26	43
C2048	2696.55	43	31.87	9	8.80	52	40.13	134.90 (97.6–181.7)	102.24 (46.7–194.1)	129.58 (96.8–169.9)	48	36	49
C2049	3241.3	33	23.73	8	6.65	41	33.25	139.09 (95.7–195.3)	120.34 (51.8–237.1)	123.30 (88.5–167.3)	49	44	45
C2050	3017.74	29	20.77	8	6.82	37	30.32	139.66 (93.5–200.6)	117.38 (50.5–231.3)	122.02 (85.9–168.2)	50	42	44
C2051	3567.16	79	56.39	17	15.34	96	67.29	140.09 (110.9–174.6)	110.85 (64.5–177.5)	142.68 (115.6–174.2)	51	38	56
C2052	3268.31	34	24.11	8	6.59	42	33.03	141.00 (97.6–197.0)	121.34 (52.2–239.1)	127.17 (91.6–171.9)	52	46	48
C2053	2663.86	38	26.68	15	8.62	53	37.19	142.42 (100.8–195.5)	174.05 (97.3–287.1)	142.50 (106.7–186.4)	53	57	55
C2054	3610.11	11	7.63	5	3.13	16	11.81	144.15 (71.9–257.9)	159.90 (51.5–373.1)	135.53 (77.4–220.1)	54	55	51
C2055	2270.93	40	26.94	17	12.02	57	40.92	148.50 (106.1–202.2)	141.40 (82.3–226.4)	139.29 (105.5–180.5)	55	50	53
C2056	2884.4	62	40.08	9	9.82	71	51.56	154.67 (118.6–198.3)	91.63 (41.8–173.9)	137.71 (107.5–173.7)	56	31	52
C2057	3055.64	41	26.17	2	7.10	43	36.84	156.68 (112.4–212.6)	28.17 (3.2–101.7)	116.73 (84.5–157.2)	57	8	41
C2058	2087.2	29	16.21	5	4.41	34	21.13	178.90 (119.8–256.9)	113.48 (36.6–264.8)	160.89 (111.4–224.8)	58	40	58
C2059	2532.19	29	13.63	4	6.66	33	20.41	212.83 (142.5–305.7)	60.04 (16.2–153.7)	161.65 (111.3–227.0)	59	17	59
C2060	2063.29	18	5.28	5	2.60	23	7.73	341.17 (202.1–539.2)	192.44 (62.0–449.1)	297.45 (188.5–446.3)	60	59	60

Table A2.3: Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1001	249.7	0	0.01	0	0.18	0	0.15	0.00 (0.0–51453.2)	0.00 (0.0–2095.3)	0.00 (0.0–2474.4)	1	16	1
D1002	1502.34	6	15.88	1	3.22	7	20.73	37.79 (13.8–82.3)	31.08 (0.4–172.9)	33.77 (13.5–69.6)	2	21	2
D1003	1747.71	8	21.04	1	5.21	9	25.14	38.02 (16.4–74.9)	19.21 (0.3–106.9)	35.80 (16.3–68.0)	3	18	3
D1004	1758.83	10	23.29	2	4.86	12	28.13	42.94 (20.6–79.0)	41.16 (4.6–148.6)	42.66 (22.0–74.5)	4	25	7
D1005	751.57	6	12.15	0	2.92	6	14.63	49.39 (18.0–107.5)	0.00 (0.0–125.7)	41.01 (15.0–89.3)	5	15	5
D1006	1349.86	8	15.05	1	4.06	9	19.39	53.14 (22.9–104.7)	24.64 (0.3–137.1)	46.41 (21.2–88.1)	6	19	9
D1007	682.81	4	7.49	1	2.34	5	11.35	53.40 (14.4–136.7)	42.69 (0.6–237.5)	44.06 (14.2–102.8)	7	27	8
D1008	1130.28	6	10.56	3	3.37	9	15.26	56.79 (20.7–123.6)	89.06 (17.9–260.2)	58.99 (26.9–112.0)	8	46	11
D1009	444.55	3	5.27	0	2.05	3	7.40	56.96 (11.4–166.4)	0.00 (0.0–179.0)	40.54 (8.1–118.5)	9	7	4
D1010	263.29	2	3.25	2	0.93	4	4.37	61.52 (6.9–222.1)	214.14 (24.0–773.2)	91.49 (24.6–234.2)	10	94	30
D1011	1099.99	6	9.67	4	2.82	10	12.19	62.08 (22.7–135.1)	141.95 (38.2–363.4)	82.04 (39.3–150.9)	11	75	20
D1012	494.36	4	6.18	2	1.99	6	7.96	64.75 (17.4–165.8)	100.72 (11.3–363.6)	75.37 (27.5–164.1)	12	55	17
D1013	467.67	5	7.50	2	2.06	7	9.56	66.66 (21.5–155.6)	97.23 (10.9–351.0)	73.19 (29.3–150.8)	13	53	15
D1014	1008.56	9	12.46	2	4.38	11	18.59	72.23 (33.0–137.1)	45.70 (5.1–165.0)	59.17 (29.5–105.9)	14	29	12
D1015	1565.96	11	15.12	1	3.71	12	19.32	72.73 (36.3–130.1)	26.93 (0.4–149.8)	62.10 (32.0–108.5)	15	20	13
D1016	673.17	8	10.54	0	2.78	8	13.94	75.91 (32.7–149.6)	0.00 (0.0–132.1)	57.37 (24.7–113.1)	16	5	10
D1017	2050.58	14	18.36	5	4.08	19	22.05	76.26 (41.7–128.0)	122.56 (39.5–286.0)	86.19 (51.9–134.6)	17	67	24
D1018	530.39	1	1.30	0	0.83	1	2.38	76.80 (1.0–427.3)	0.00 (0.0–443.4)	41.96 (0.5–233.5)	18	14	6
D1019	1836.16	17	22.12	2	5.13	19	28.02	76.87 (44.8–123.1)	38.95 (4.4–140.6)	67.80 (40.8–105.9)	19	24	14
D1020	436.64	4	5.11	3	2.21	7	7.23	78.20 (21.0–200.2)	135.78 (27.3–396.7)	96.79 (38.8–199.4)	20	71	35

(continued)

Table A2.3 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1021	406.16	6	6.99	1	1.25	7	9.43	85.83 (31.3–186.8)	79.81 (1.0–444.0)	74.19 (29.7–152.9)	21	42	16
D1022	738.5	18	20.23	3	3.32	21	22.79	88.96 (52.7–140.6)	90.39 (18.2–264.1)	92.14 (57.0–140.8)	22	49	31
D1023	696.18	10	11.06	4	4.54	14	14.39	90.38 (43.3–166.2)	88.10 (23.7–225.5)	97.30 (53.1–163.3)	23	45	36
D1024	1937.9	26	28.37	4	4.26	30	31.78	91.66 (59.9–134.3)	93.80 (25.2–240.2)	94.39 (63.7–134.8)	24	52	33
D1025	1499.31	13	14.12	2	3.08	15	16.40	92.04 (49.0–157.4)	64.87 (7.3–234.2)	91.46 (51.2–150.9)	25	38	29
D1026	955.85	9	9.68	2	2.73	11	13.79	92.98 (42.4–176.5)	73.39 (8.2–265.0)	79.76 (39.8–142.7)	26	41	18
D1027	489.02	6	6.30	4	1.79	10	9.27	95.30 (34.8–207.4)	223.52 (60.1–572.3)	107.89 (51.7–198.4)	27	99	45
D1028	441.52	2	2.07	0	0.46	2	2.43	96.73 (10.9–349.3)	0.00 (0.0–792.6)	82.30 (9.2–297.1)	28	6	22
D1029	733.61	11	11.36	3	2.93	14	14.31	96.86 (48.3–173.3)	102.35 (20.6–299.1)	97.81 (53.4–164.1)	29	58	38
D1030	1147.8	12	12.28	5	4.59	17	18.82	97.72 (50.4–170.7)	109.04 (35.1–254.5)	90.35 (52.6–144.7)	30	61	28
D1031	1705.78	13	13.30	2	4.61	15	18.29	97.72 (52.0–167.1)	43.39 (4.9–156.6)	82.03 (45.9–135.3)	31	28	19
D1032	1814.43	11	11.18	2	2.49	13	14.63	98.40 (49.1–176.1)	80.46 (9.0–290.5)	88.86 (47.3–152.0)	32	43	27
D1033	903.62	10	10.14	4	2.46	14	13.51	98.57 (47.2–181.3)	162.36 (43.7–415.7)	103.65 (56.6–173.9)	33	84	42
D1034	722.32	9	9.11	1	2.57	10	12.15	98.82 (45.1–187.6)	38.89 (0.5–216.4)	82.31 (39.4–151.4)	34	23	23
D1035	1527.35	17	17.03	2	5.28	19	23.09	99.83 (58.1–159.8)	37.87 (4.3–136.7)	82.28 (49.5–128.5)	35	22	21
D1036	686.64	6	5.94	1	2.01	7	7.89	101.05 (36.9–220.0)	49.79 (0.7–277.0)	88.68 (35.5–182.7)	36	30	25
D1037	437.25	1	0.99	3	0.97	4	1.97	101.06 (1.3–562.3)	308.10 (61.9–900.2)	203.49 (54.7–521.0)	37	107	100
D1038	1830.54	12	11.69	6	4.21	18	16.87	102.70 (53.0–179.4)	142.37 (52.0–309.9)	106.68 (63.2–168.6)	38	76	43
D1039	1848.87	30	28.14	5	4.61	35	28.52	106.62 (71.9–152.2)	108.54 (35.0–253.3)	122.72 (85.5–170.7)	39	60	54
D1040	385.92	6	5.51	1	1.80	7	7.89	108.97 (39.8–237.2)	55.49 (0.7–308.7)	88.69 (35.5–182.7)	40	35	26
D1041	981.45	16	14.62	6	4.27	22	18.69	109.42 (62.5–177.7)	140.64 (51.4–306.1)	117.69 (73.7–178.2)	41	73	51

(continued)

Table A2.3 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1042	490.22	10	9.13	2	2.19	12	12.33	109.56 (52.5–201.5)	91.18 (10.2–329.2)	97.34 (50.2–170.0)	42	50	37
D1043	1988.56	24	21.75	8	5.25	32	29.83	110.36 (70.7–164.2)	152.27 (65.6–300.1)	107.27 (73.4–151.4)	43	79	44
D1044	518.61	8	6.94	0	2.00	8	8.43	115.25 (49.6–227.1)	0.00 (0.0–183.5)	94.84 (40.8–186.9)	44	13	34
D1045	1739.28	23	19.50	5	3.40	28	20.56	117.92 (74.7–176.9)	146.96 (47.4–343.0)	136.19 (90.5–196.8)	45	77	66
D1046	726.86	8	6.78	1	1.73	9	9.70	117.99 (50.8–232.5)	57.90 (0.8–322.2)	92.76 (42.3–176.1)	46	37	32
D1047	1215.85	19	15.88	11	4.56	30	19.52	119.68 (72.0–186.9)	241.23 (120.3–431.7)	153.67 (103.7–219.4)	47	105	81
D1048	691.06	15	12.47	4	2.63	19	16.34	120.28 (67.3–198.4)	152.23 (41.0–389.7)	116.28 (70.0–181.6)	48	78	50
D1049	506.27	9	7.48	3	1.35	12	8.90	120.33 (54.9–228.4)	222.32 (44.7–649.6)	134.91 (69.6–235.7)	49	97	64
D1050	1254.03	15	12.29	4	3.14	19	16.85	122.03 (68.2–201.3)	127.43 (34.3–326.2)	112.79 (67.9–176.1)	50	69	47
D1051	1352.38	13	10.55	6	2.57	19	15.09	123.21 (65.5–210.7)	233.18 (85.1–507.5)	125.90 (75.8–196.6)	51	104	56
D1052	726.51	12	9.65	4	4.32	16	13.88	124.30 (64.2–217.1)	92.49 (24.9–236.8)	115.28 (65.8–187.2)	52	51	49
D1053	767.86	10	8.03	1	1.48	11	9.72	124.60 (59.6–229.2)	67.66 (0.9–376.4)	113.14 (56.4–202.5)	53	40	48
D1054	749.03	7	5.61	3	1.84	10	7.27	124.77 (50.0–257.1)	163.31 (32.8–477.2)	137.52 (65.8–252.9)	54	85	70
D1055	744.58	10	7.95	1	2.39	11	10.90	125.83 (60.2–231.4)	41.93 (0.5–233.3)	100.89 (50.3–180.5)	55	26	40
D1056	798.36	15	11.83	4	2.83	19	14.23	126.75 (70.9–209.1)	141.47 (38.1–362.2)	133.56 (80.4–208.6)	56	74	61
D1057	176.84	3	2.35	1	1.50	4	3.98	127.55 (25.6–372.7)	66.79 (0.9–371.6)	100.62 (27.1–257.6)	57	39	39
D1058	399.49	7	5.37	5	2.89	12	6.93	130.25 (52.2–268.4)	172.72 (55.7–403.1)	173.24 (89.4–302.6)	58	88	90
D1059	331.38	5	3.83	2	1.97	7	5.91	130.67 (42.1–304.9)	101.66 (11.4–367.0)	118.48 (47.5–244.1)	59	57	52
D1060	1454.86	43	32.81	12	7.41	55	39.34	131.05 (94.8–176.5)	161.92 (83.6–282.9)	139.82 (105.3–182.0)	60	83	72
D1061	1413.3	23	17.48	7	4.54	30	22.63	131.57 (83.4–197.4)	154.21 (61.8–317.7)	132.58 (89.4–189.3)	61	82	60
D1062	252.9	6	4.53	1	0.77	7	4.55	132.43 (48.4–288.3)	129.26 (1.7–719.2)	153.77 (61.6–316.8)	62	70	82

(continued)

Table A2.3 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1063	1013.31	15	10.95	5	2.96	20	14.60	136.94 (76.6–225.9)	168.73 (54.4–393.8)	136.97 (83.6–211.6)	63	87	68
D1064	500.97	6	4.32	4	2.62	10	7.28	138.76 (50.7–302.0)	152.41 (41.0–390.2)	137.43 (65.8–252.7)	64	81	69
D1065	902.48	14	10.03	3	2.74	17	12.58	139.55 (76.2–234.2)	109.45 (22.0–319.8)	135.18 (78.7–216.4)	65	62	65
D1066	1052.11	17	12.16	6	2.69	23	15.70	139.83 (81.4–223.9)	223.13 (81.5–485.7)	146.51 (92.8–219.8)	66	98	76
D1067	1857.83	17	11.74	7	4.19	24	17.05	144.75 (84.3–231.8)	167.11 (66.9–344.3)	140.80 (90.2–209.5)	67	86	73
D1068	1665.76	18	12.26	0	3.17	18	16.36	146.78 (86.9–232.0)	0.00 (0.0–115.8)	110.02 (65.2–173.9)	68	12	46
D1069	508.22	3	2.03	1	0.73	4	3.27	147.75 (29.7–431.7)	136.65 (1.8–760.3)	122.23 (32.9–312.9)	69	72	53
D1070	619.42	7	4.72	3	2.43	10	6.09	148.26 (59.4–305.5)	123.65 (24.9–361.3)	164.14 (78.6–301.9)	70	68	88
D1071	617.73	10	6.69	3	2.57	13	10.43	149.44 (71.5–274.8)	116.67 (23.4–340.9)	124.60 (66.3–213.1)	71	65	55
D1072	1298.77	20	13.32	8	3.73	28	17.54	150.20 (91.7–232.0)	214.50 (92.4–422.7)	159.65 (106.1–230.7)	72	95	84
D1073	678.23	17	11.23	8	4.05	25	15.12	151.32 (88.1–242.3)	197.69 (85.1–389.6)	165.31 (107.0–244.0)	73	91	89
D1074	267.13	14	8.96	2	1.74	16	11.75	156.26 (85.4–262.2)	115.07 (12.9–415.5)	136.19 (77.8–221.2)	74	64	67
D1075	915.97	12	7.59	7	3.43	19	11.79	158.14 (81.6–276.3)	204.26 (81.8–420.9)	161.10 (96.9–251.6)	75	92	86
D1076	321.34	5	3.11	0	1.19	5	4.89	160.99 (51.9–375.7)	0.00 (0.0–308.5)	102.33 (33.0–238.8)	76	17	41
D1077	388.42	6	3.71	0	0.61	6	4.61	161.69 (59.0–351.9)	0.00 (0.0–599.5)	130.29 (47.6–283.6)	77	10	58
D1078	1027.32	18	11.05	6	5.28	24	15.56	162.83 (96.5–257.4)	113.63 (41.5–247.3)	154.26 (98.8–229.5)	78	63	83
D1079	1858.28	22	13.48	10	4.33	32	18.23	163.25 (102.3–247.2)	230.89 (110.5–424.6)	175.51 (120.0–247.8)	79	103	91
D1080	1171.41	18	10.85	7	5.94	25	16.81	165.91 (98.3–262.2)	117.91 (47.2–243.0)	148.70 (96.2–219.5)	80	66	77
D1081	647.41	12	7.19	3	2.79	15	10.53	166.97 (86.2–291.7)	107.60 (21.6–314.4)	142.46 (79.7–235.0)	81	59	75
D1082	1144.16	22	12.88	10	2.51	32	16.90	170.77 (107.0–258.6)	397.67 (190.4–731.4)	189.31 (129.5–267.3)	82	108	95
D1083	1193.14	31	17.96	3	5.76	34	22.82	172.60 (117.2–245.0)	52.10 (10.5–152.2)	148.97 (103.2–208.2)	83	32	78

(continued)

Table A2.3 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1084	386.58	10	5.63	2	1.98	12	7.99	177.64 (85.0–326.7)	101.05 (11.3–364.8)	150.15 (77.5–262.3)	84	56	79
D1085	386.97	8	4.42	2	2.24	10	7.42	180.82 (77.9–356.3)	89.26 (10.0–322.3)	134.83 (64.5–248.0)	85	47	63
D1086	394.09	11	6.08	0	2.17	11	8.22	181.01 (90.2–323.9)	0.00 (0.0–168.7)	133.82 (66.7–239.5)	86	9	62
D1087	1552.27	23	12.55	2	3.66	25	18.02	183.34 (116.2–275.1)	54.67 (6.1–197.4)	138.73 (89.8–204.8)	87	34	71
D1088	908.21	12	6.43	0	1.84	12	8.45	186.76 (96.4–326.3)	0.00 (0.0–199.3)	142.00 (73.3–248.1)	88	3	74
D1089	225.69	3	1.60	0	0.58	3	2.34	187.51 (37.7–547.9)	0.00 (0.0–632.6)	128.25 (25.8–374.7)	89	11	57
D1090	1387.25	8	4.01	9	2.13	17	6.45	199.49 (85.9–393.1)	422.45 (192.8–802.0)	263.72 (153.5–422.3)	90	109	106
D1091	1112.18	23	11.33	7	3.69	30	15.52	202.99 (128.6–304.6)	189.76 (76.0–391.0)	193.31 (130.4–276.0)	91	90	97
D1092	302	12	5.87	5	1.65	17	7.14	204.31 (105.4–356.9)	302.16 (97.4–705.1)	238.16 (138.7–381.3)	92	106	105
D1093	265.76	12	5.85	1	1.89	13	8.09	205.09 (105.9–358.3)	53.03 (0.7–295.0)	160.65 (85.5–274.7)	93	33	85
D1094	1449.34	22	10.71	3	3.61	25	15.52	205.39 (128.7–311.0)	83.06 (16.7–242.7)	161.13 (104.2–237.9)	94	44	87
D1095	658.92	18	8.69	2	3.55	20	13.14	207.21 (122.7–327.5)	56.40 (6.3–203.6)	152.26 (93.0–235.2)	95	36	80
D1096	1165.51	28	13.40	11	5.09	39	17.85	208.97 (138.8–302.0)	216.29 (107.8–387.0)	218.49 (155.4–298.7)	96	96	103
D1097	1458.31	35	16.72	11	5.34	46	23.13	209.27 (145.7–291.1)	205.94 (102.7–368.5)	198.87 (145.6–265.3)	97	93	98
D1098	260.31	5	2.34	0	0.81	5	3.79	213.64 (68.8–498.6)	0.00 (0.0–451.4)	131.97 (42.5–308.0)	98	4	59
D1099	871.67	15	6.94	2	1.99	17	9.52	216.23 (120.9–356.7)	100.55 (11.3–363.0)	178.50 (103.9–285.8)	99	54	92
D1100	276.42	10	4.51	1	1.11	11	5.80	221.80 (106.2–407.9)	89.90 (1.2–500.2)	189.69 (94.6–339.4)	100	48	96

(continued)

Table A2.3 (continued): Observed and expected deaths, HSMRs, 95% CIs, and the peer rankings for 80%, 20% and 100% of in-hospital deaths for peer group D1

Study assigned ID	cwaseps	80%		20%		100%		HSMRs			Rank		
		O	E	O	E	O	E	80%(LCI–UCI)	20%(LCI–UCI)	100%(LCI–UCI)	80%	20%	100%
D1101	1058.58	20	8.29	0	2.18	20	11.18	241.36 (147.4–372.8)	0.00 (0.0–168.3)	178.87 (109.2–276.3)	101	2	93
D1102	461.58	4	1.61	1	0.54	5	2.72	249.04 (67.0–637.6)	186.62 (2.4–1038.3)	183.91 (59.3–429.2)	102	89	94
D1103	637.57	15	5.92	6	2.62	21	10.53	253.24 (141.6–417.7)	228.88 (83.6–498.2)	199.50 (123.4–305.0)	103	101	99
D1104	530.33	9	2.94	0	0.83	9	4.27	306.55 (139.9–582.0)	0.00 (0.0–442.6)	210.78 (96.2–400.2)	104	1	101
D1105	601.32	14	4.07	1	1.98	15	6.39	344.37 (188.1–577.8)	50.60 (0.7–281.6)	234.66 (131.2–387.1)	105	31	104
D1106	472.97	13	3.42	2	1.31	15	5.09	380.07 (202.2–650.0)	152.40 (17.1–550.2)	294.46 (164.7–485.7)	106	80	107
D1107	271.58	8	2.00	0	1.50	8	3.67	400.74 (172.6–789.7)	0.00 (0.0–244.8)	218.24 (94.0–430.0)	107	8	102
D1108	746.91	14	2.89	5	2.19	19	4.64	485.07 (265.0–813.9)	228.00 (73.5–532.1)	409.49 (246.4–639.5)	108	100	108
D1109	440.94	17	3.49	3	1.30	20	4.75	486.58 (283.3–779.1)	230.24 (46.3–672.7)	421.45 (257.3–650.9)	109	102	109

Appendix 3 Funnel plots of HSMRs in 2005–06

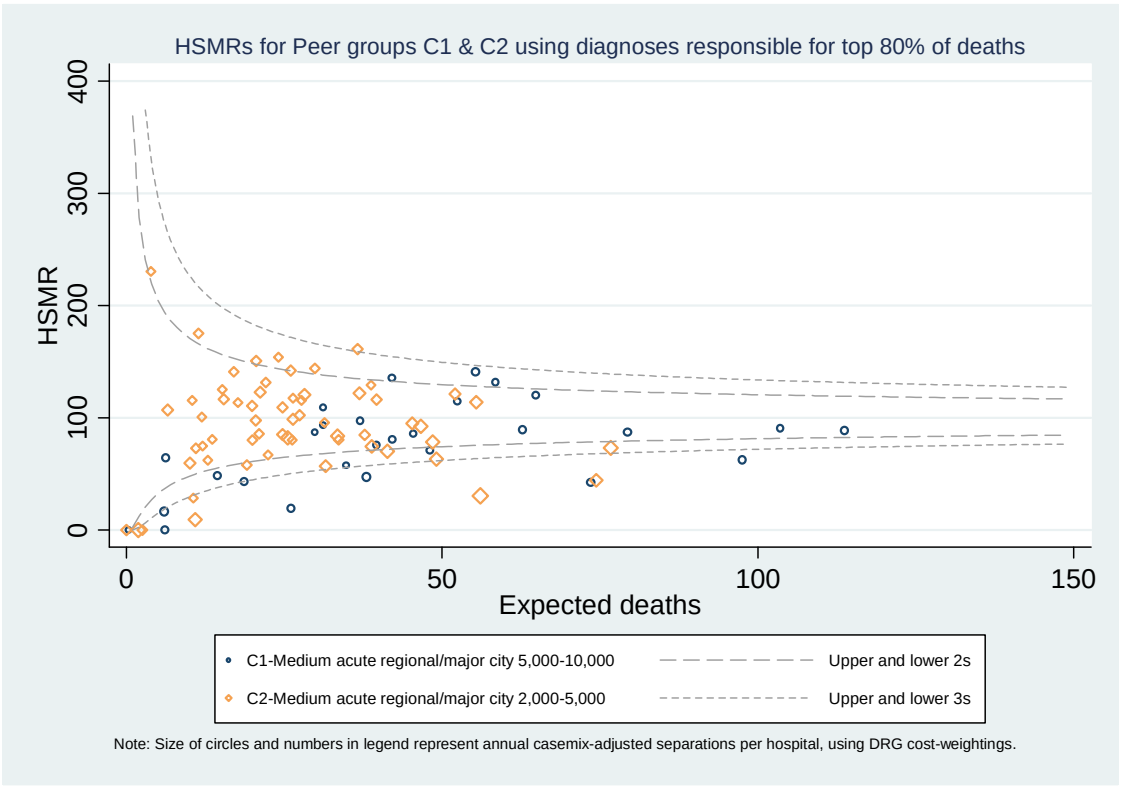

Figure A3.1: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group C1, and C2, 80% of in-hospital mortality

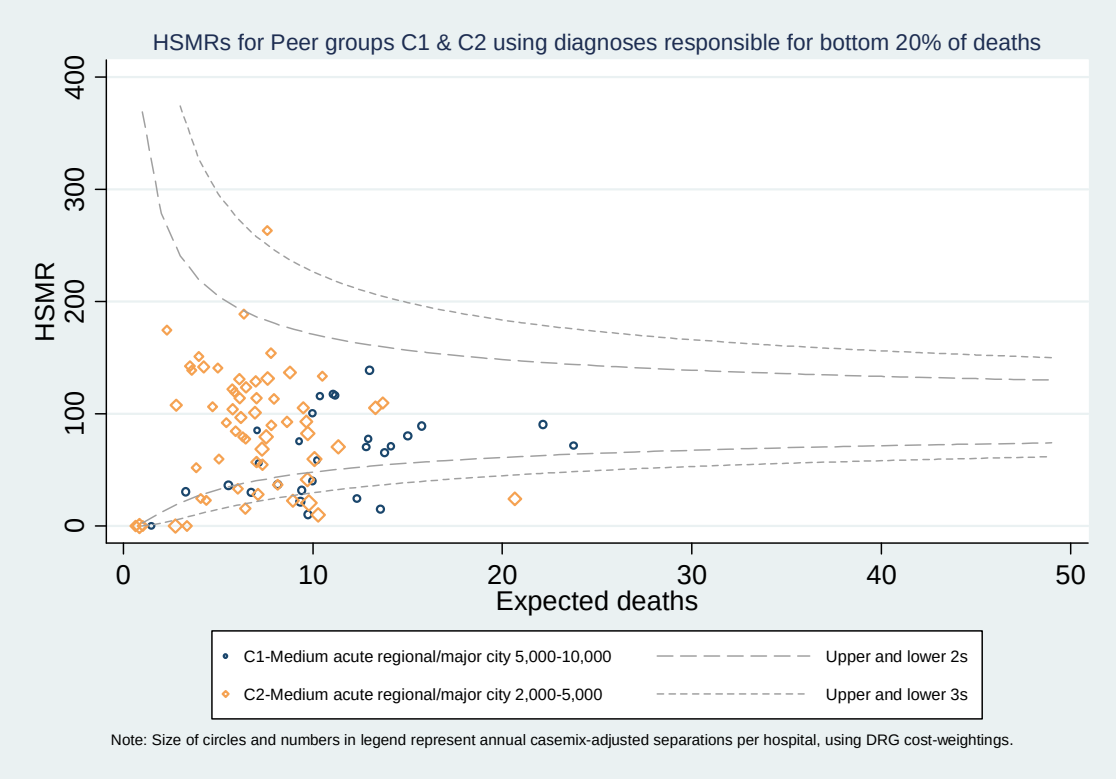

Figure A3.2: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group C1, and C2, 20% of in-hospital mortality

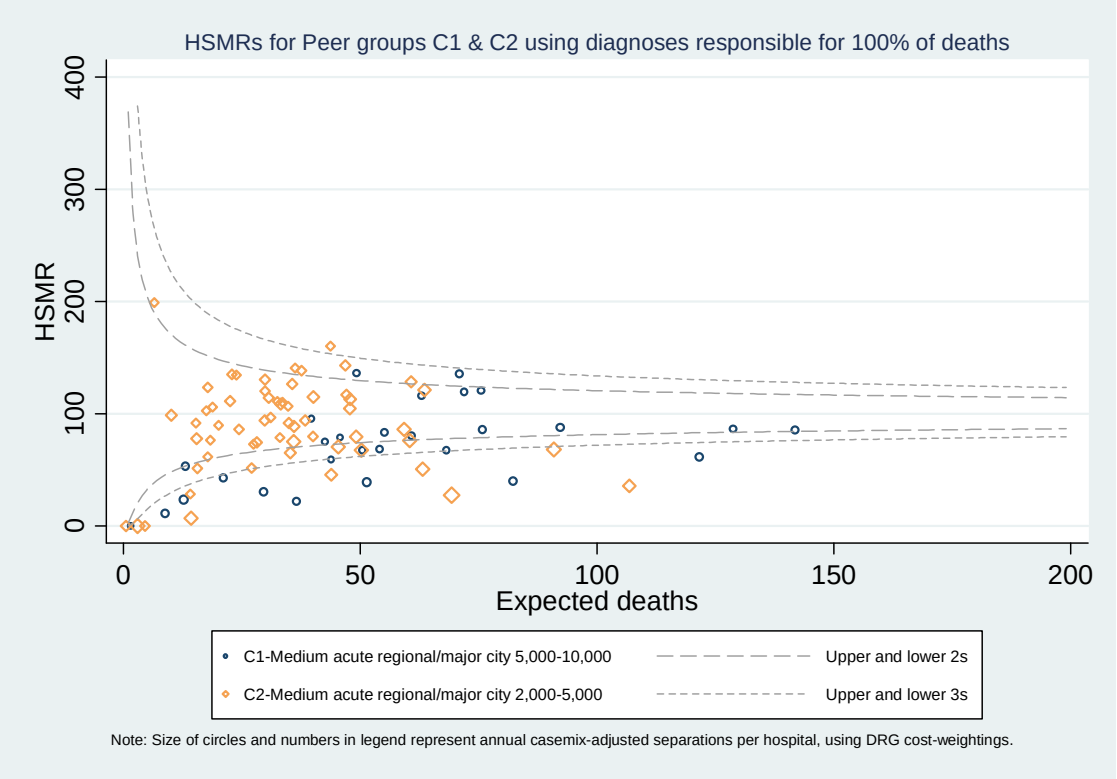

Figure A3.3: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group C1, and C2, 100% of in-hospital mortality

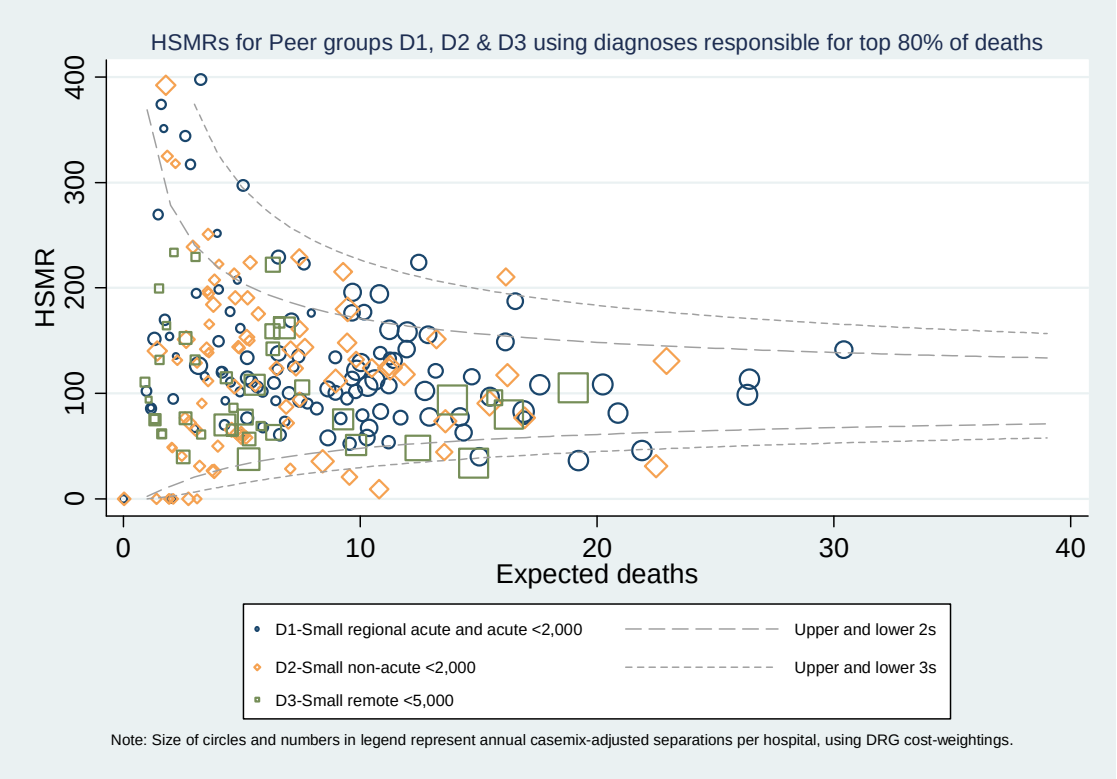

Figure A3.4: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group D1, D2 and D2, 80% of in-hospital mortality

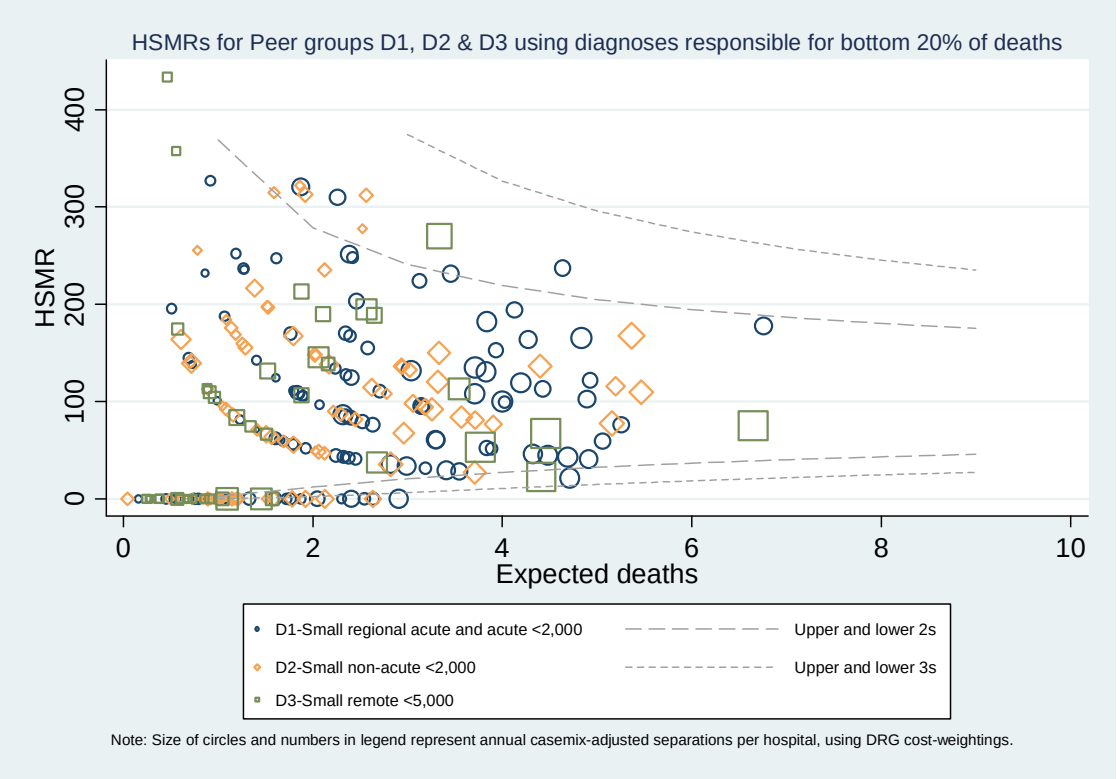

Figure A3.5: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group D1, D2 and D3, 20% of in-hospital mortality

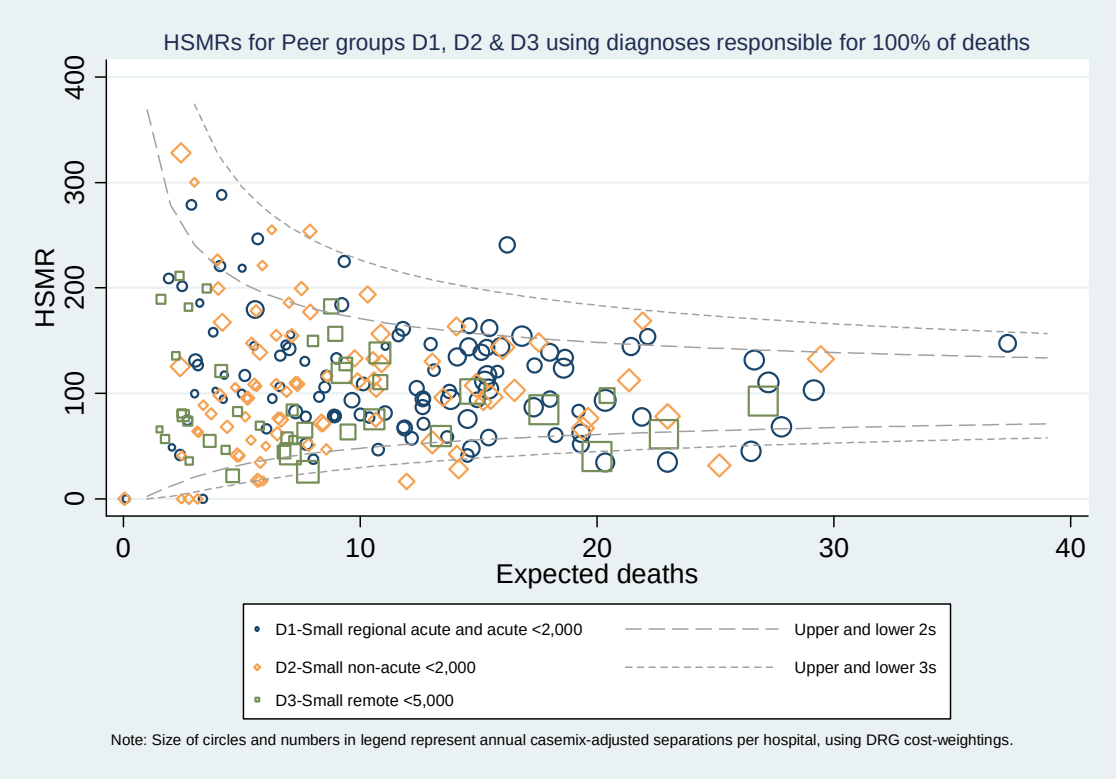

Figure A3.6: Variation in HSMRs according to the expected number of deaths and the size of the institution, peer group D1, D2 and D3, 100% of in-hospital mortality

Appendix 4 Caterpillar plots

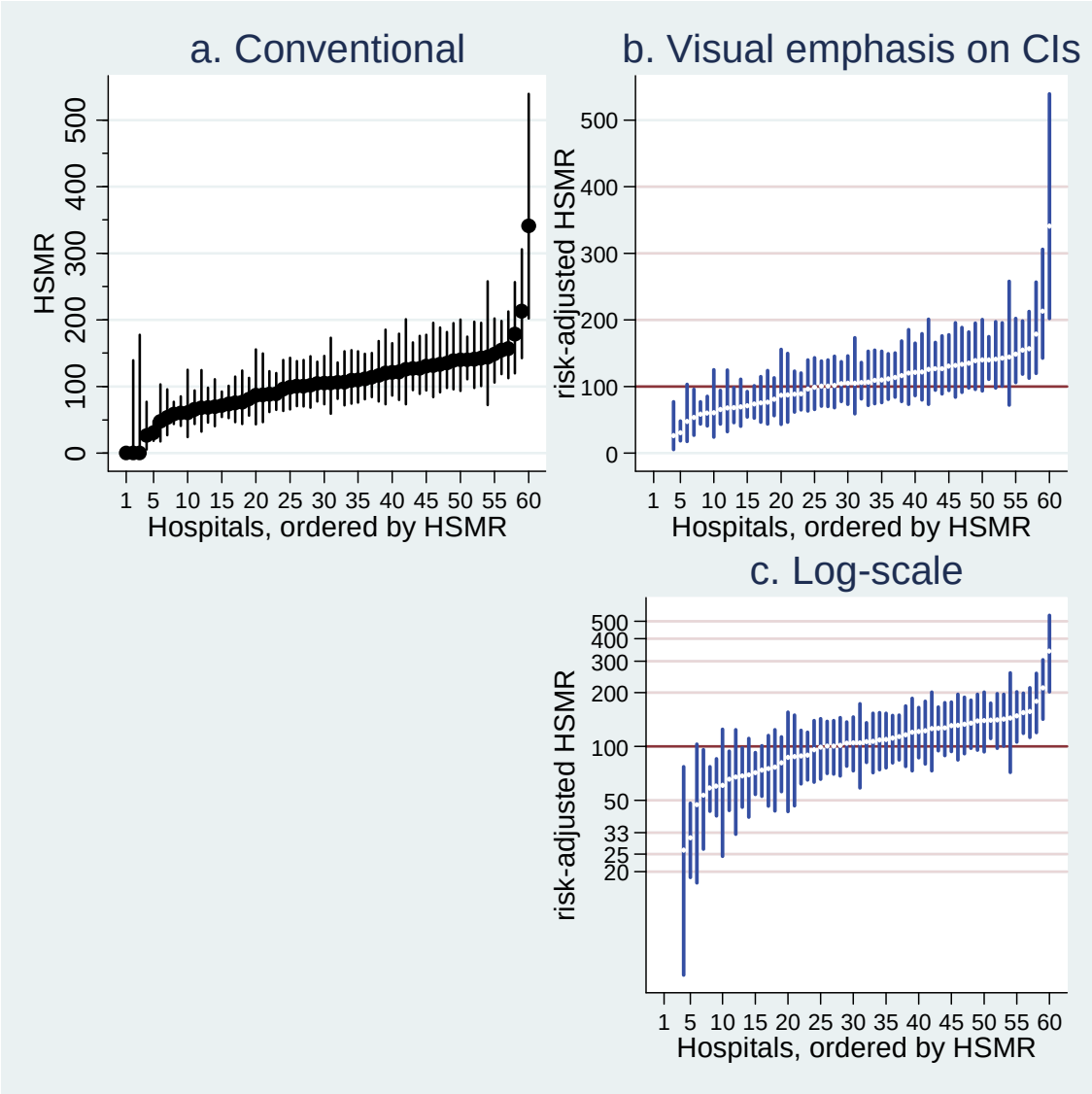

Figure A4.1. Caterpillar plots: variations of format and scaling

Figure A4.1a presents HSMRs for a group of hospitals. The figure is a fairly standard caterpillar plot. The y-axis is linear and the point estimates have more visual emphasis than the confidence intervals.

Figures A4.1b and A4.1c present the same HSMRs as Figure A4.1a. Figure A4.1b differs only in giving more visual emphasis to the confidence intervals, on the grounds that this will reduce a tendency of readers to focus on the point estimates, thus treating the figure like a league table.

Figure A4.2c presents the same data with the HSMRs placed on a log scale. The argument for doing this is that because the HSMR is a ratio it should be presented on a ratio scale. An

HSMR of 50 is half the reference value of 100 and an HSMR of 200 is twice the reference value. Use of a log scale places HSMRs of 50 and 200 the same distance from the line marking 100. (Guide-lines have been placed on Figure A4.2b at points corresponding to half and double 100, one-third and triple, and so on.)

An effect of the transformation is to give more visual emphasis to HSMRs that are below 100, especially those well below it. Conversely, HSMRs that are well above 100 have less visual emphasis.

Figure A4.2 shows the same set of HSMRs in three further ways. Like Figure A4.1c, all of these figures place the HSMRs on a log scale. The main difference is that the presentation has been transposed. The result is somewhat similar to a forest plot. Although not done here, this orientation lends itself to inclusion of hospital names in the plot. The names can be placed in the ordinary orientation for reading and many names can be shown in a figure that will fit on a single page.

The first chart in Figure A4.2, like all of those in Figure A4.1, shows the point estimate of HSMR as a fixed symbol. The second differs by using a circle centred on the point estimate value, the size of which corresponds to the size of the hospital (measured in terms of casemix adjusted separations). Funnel plots include that information. The third has both a small symbol marking the point estimate and a circle indicating hospital size.

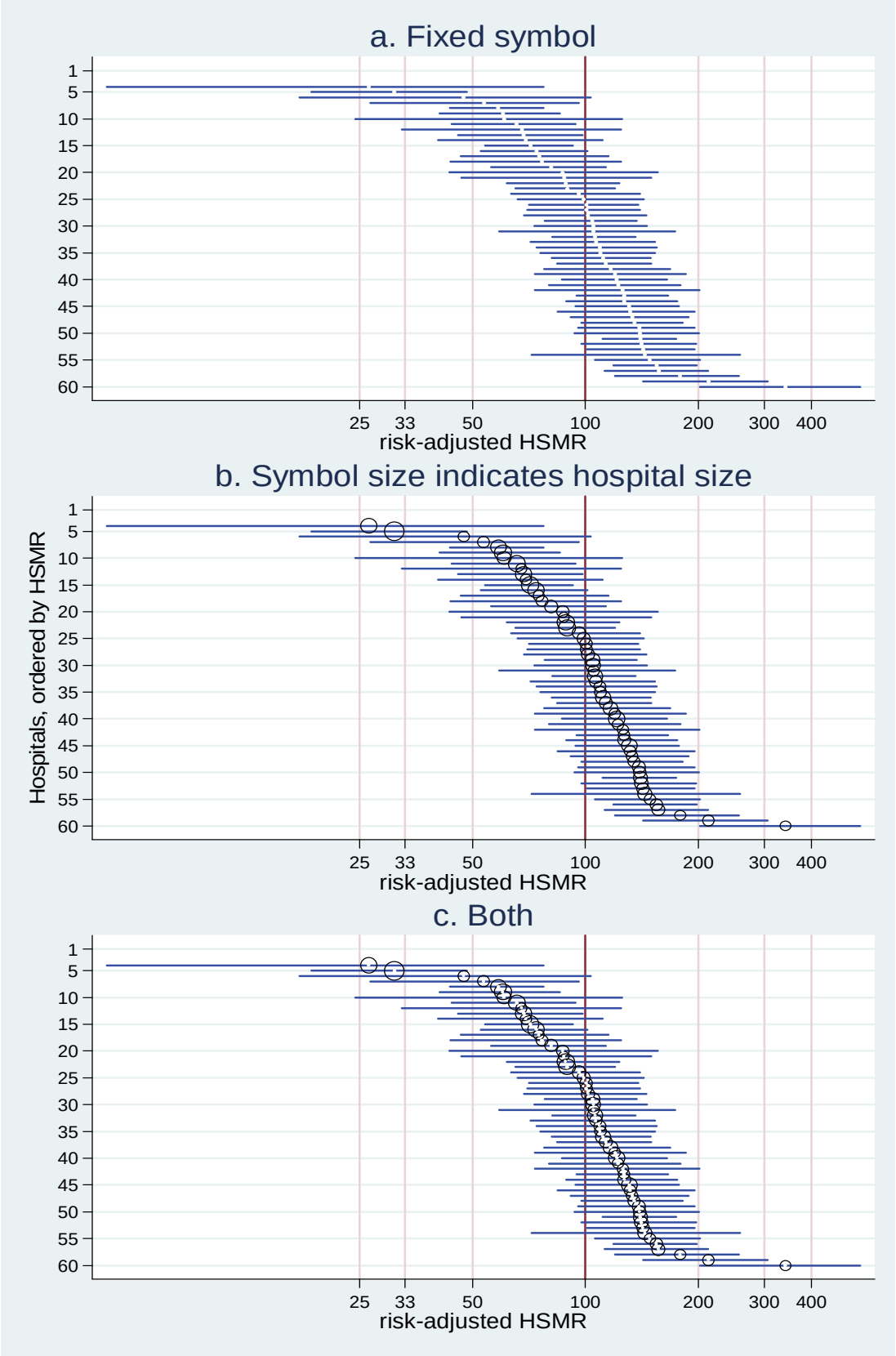

Figure A4.2. Three presentations of transposed log-scaled caterpillar plots

Appendix 5 Data issues

National Hospital Morbidity Database

The hospital separations data were provided by the AIHW, from the NHMD. All data elements within the NHMD used in this study conform to the requirements and definitions set out in the National Health Data Dictionary (HDSC 2006) unless otherwise specified.

Detailed information about individual data elements within the NHMD can be found within the National Health Data Dictionary or online using METEOR (<http://meteor.aihw.gov.au>)—the AIHW's Metadata Online Registry.

For further information about the data used in this project and about the topics below, readers are referred to the AIHW publication Australian Hospital Statistics, 2005–06 (AIHW 2007) and the equivalent publications for data-years 2004–05 and 2006–07.

The following sections are taken from the Appendixes of Australian Hospital Statistics 2005–06 (AIHW 2007) and provide information about categories and classifications used in this report.

Public and private hospitals

Taken from: Australian Hospital Statistics 2005–06 Appendix 2: Hospitals contributing to the report and public hospital peer groups (AIHW 2007: 311)

'Throughout this report, unless otherwise specified:

- public acute hospitals and public psychiatric hospitals are included in the public hospital (public sector) category
- all public hospitals other than public psychiatric hospitals are included in the public acute hospital category
- private psychiatric hospitals, private free-standing day hospital facilities and other private hospitals are included in the private hospital (private sector) category
- all private hospitals other than private free-standing day hospital facilities are included in the other private hospitals category.

There is currently some variation between jurisdictions in whether hospitals that predominantly provide public hospital services, and that are privately owned and/or operated, are reported as public or private hospitals. A selection of these hospitals is listed in Table A2.1 in the AIHW report with information on whether they are reported as public or private hospitals.

Other changes in hospital ownership or management arrangements can also affect whether hospital activity is reported as public or private. For example, between 2003–04 and 2004–05 two private hospitals in Western Australia were purchased by the Western Australian Department of Health and were amalgamated with two existing public hospitals. Hence the activity associated with the former private hospitals is now included in the activity reporting of the two public hospitals. From 2004–05, the Mersey Community Hospital in Tasmania, which previously operated as a private hospital providing predominantly public services on

a contracted basis, merged with the Northwest Regional Hospital and is categorised as a public hospital.'

Public hospital peer groups

Taken from: Australian Hospital Statistics 2005–06. Appendix 2: Hospitals contributing to the report and public hospital peer groups (AIHW 2007: 317)

The AIHW worked with the National Health Ministers' Benchmarking Working Group (NHMBWG) and the National Health Performance Committee (NHPC) to develop a national public hospital peer group classification for use in presenting data on costs per casemix-adjusted separation. The aim was to allow more meaningful comparison of the data than comparison at the jurisdiction level would allow.

The peer groups were therefore designed to explain variability in the average cost per casemix-adjusted separation. They also group hospitals into broadly similar groups in terms of their range of admitted patient activity, and their geographical location, with the peer groups allocated names that are broadly descriptive of the types of hospitals included in each category. Although not specifically designed for purposes other than the cost per casemix-adjusted separation analysis, the peer group classification is recognised as a useful way to categorise hospitals for other purposes, including the presentation of other data.'

The peer group to which each public hospital was assigned for 2005–06 is included in Table A2.2 within the Australian Hospital Statistics 2005–06 publication and is summarised in Table 2 in Section 4.1.2 of this report.

SEIFA

Taken from: Australian Hospital Statistics 2005–06. Appendix 1: Technical notes (AIHW 2007: 301–2)

The 'SEIFA Index of Advantage/Disadvantage was generated by the ABS using a combination of Census data, including variables measuring both advantage and disadvantage. A higher score on the index indicates that an area has attributes that measure advantage, such as a relatively high proportion of people with high incomes or a skilled workforce. It also means an area has a low proportion of people with variables that measure disadvantage, such as low incomes and relatively few unskilled people in the workforce.

Conversely, a low score on the index indicates that an area has a high proportion of individuals with variables that measure disadvantage, such as low incomes and more employees in unskilled occupations, and a low proportion of people with variables that measure advantage, such as high incomes or people in skilled occupations. Hence, the index offsets any disadvantage in an area with advantage.

Separation rates by quintile of advantage/disadvantage were generated by the AIHW by using the SEIFA scores for this study for the SLA of usual residence of the patient reported for each separation. The most disadvantaged quintile represents the areas containing the 20% of the population with the least advantage/most disadvantage and the most advantaged quintile represents the areas containing the 20% of the population with the least disadvantage/most advantage.'

Errors, inconsistencies and uncertainties

NHMD data are generally abstracted from records, entered and coded in hospitals, passed to state and territory health departments, then to the AIHW before being provided to the National Injury Surveillance Unit (NISU). Processing occurs at each of these steps. Errors and inconsistencies can arise due to the large number of people and processes involved in providing the data. Some variations occur in reporting and coding although Coding Standards, National Minimum Data Sets and other mechanisms have reduced this.

Quality of ICD-10-AM coded data

Taken from *Australian Hospital Statistics 2005–06. Appendix 1: Technical* notes (AIHW 2007: 288–9)

'Diagnosis, procedure and external cause data for 2005–06 were reported to the NHMD by all states and territories using the fourth edition of the International statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM) (NCCH 2004).

The quality of coded diagnosis, procedure and external cause data can be assessed using coding audits in which, in general terms, selected records are independently recoded, and the resulting codes compared with the codes originally assigned for the separation. There are no national standards for this auditing, so it is not possible to use information on coding audits to make quantitative assessments of data quality on a national basis.

The quality and comparability of the coded data can, however, be gauged by information provided by the states and territories on the quality of the data, by the numbers of diagnosis and procedure codes reported and by assessment of apparent variation in the reporting of additional diagnoses. The comparability of the data can also be influenced by state-specific coding standards.'

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