



Fig. 1 General thoracic surgery. IHD, ischemic heart disease

Table 1 Congenital (total 9,346)

(1) CPB (+) (total 7,260)

in 2007

	Neonate			Infant			1–17 Years			≥18 Years			Total		
	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1 PDA	1	0	0	5	0	0	3	0	0	35	0	0	44	0	0
2 Coarctation (simple)	5	0	0	5	0	0	12	0	0	7	0	0	29	0	0
3 +VSD	36	1 (2.8)	1 (2.8)	45	0	0	5	0	0	1	0	0	87	1 (1.1)	1 (1.1)
4 +DORV	10	1 (10.0)	2 (20.0)	5	0	1 (20.0)	2	0	0	0	0	0	17	1 (5.9)	3 (17.6)
5 +AVSD	3	0	0	2	0	0	0	0	0	0	0	0	5	0	0
6 +TGA	3	0	1 (33.3)	2	0	0	0	0	0	0	0	0	5	0	1 (20.0)
7 +SV	3	0	0	4	0	0	6	1 (16.7)	0	0	0	0	13	1 (7.7)	0
8 +Others	6	1 (16.7)	1 (16.7)	6	1 (16.7)	1 (16.7)	1	0	0	2	0	0	15	2 (13.3)	2 (13.3)
9 Interrupt. of Ao (simple)	2	1 (50.0)	1 (50.0)	0	0	0	0	0	0	1	0	0	3	1 (33.3)	1 (33.3)
10 +VSD	27	1 (3.7)	2 (7.4)	20	2 (10.0)	2 (10.0)	0	0	0	0	0	0	47	3 (6.4)	4 (8.5)
11 +DORV	3	1 (33.0)	1 (33.3)	1	1 (100.0)	1 (100.0)	1	0	0	0	0	0	5	2 (40.0)	2 (40.0)
12 +Truncus	4	0	1 (25.0)	1	0	0	0	0	0	0	0	0	5	0	1 (20.0)
13 +TGA	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
14 +Others	9	1 (33.0)	1 (11.1)	9	1 (11.1)	1 (11.1)	1	0	0	0	0	0	19	2 (10.5)	2 (10.5)
15 Vascular ring	0	0	0	3	0	0	2	0	0	1	0	0	6	0	0
16 PS	1	0	0	7	0	0	13	0	0	9	0	0	30	0	0
17 PA-IVS or Critical PS	7	0	0	38	1 (2.6)	1 (2.6)	68	1 (1.5)	1 (1.5)	2	0	0	115	2 (1.7)	2 (1.7)
18 TAPVR	90	12 (13.3)	15 (16.7)	65	2 (3)	4 (6.2)	7	1 (14.3)	2 (28.6)	0	0	0	162	15 (9)	21 (13)
19 PAPVR ± ASD	8	2 (25.0)	2 (25.0)	13	0	0	65	0	0	21	0	0	107	2 (1.9)	2 (1.9)
20 ASD	7	0	0	50	0	0	749	1 (0.1)	1 (0.1)	801	6 (0.7)	7 (0.9)	1,607	7 (0.4)	8 (0.5)
21 Cor triatriatum	2	0	0	13	1 (7.7)	1 (7.7)	16	0	0	4	1 (25.0)	1 (25.0)	35	2 (5.7)	2 (5.7)
22 AVSD (partial)	0	0	0	14	0	0	59	0	0	16	0	0	89	0	0
23 AVSD (complete)	2	0	0	105	5 (4.8)	6 (5.7)	53	1 (1.9)	1 (1.9)	2	0	0	162	6 (3.7)	7 (4.3)
24 +TOF or DORV	0	0	0	7	0	0	18	1 (5.6)	2 (11.1)	3	0	0	28	1 (3.6)	2 (7.1)
25 +Others	0	0	0	4	0	0	12	0	0	1	0	0	17	0	0
26 VSD(subarterial)	1	0	0	118	0	0	247	0	0	28	0	0	394	0	0
27 VSD(perimemb./muscular)	17	0	0	784	2 (0.3)	3 (0.4)	460	1 (0.2)	1 (0.2)	81	0	0	1,342	3 (0.2)	4 (0.3)
28 VSD + PS	1	0	0	21	0	0	30	0	0	10	0	0	62	0	0
29 DCRV ± VSD	0	0	0	13	0	0	27	0	0	19	0	0	59	0	0
30 Aneurysm of sinus Valsalva	0	0	0	0	0	0	3	0	0	27	0	0	30	0	0
31 TOF	7	1 (14.3)	1 (14.3)	142	2 (1.4)	2 (1.4)	255	1 (0.4)	1 (0.4)	15	2 (13.3)	2 (13.3)	419	6 (1.4)	6 (1.4)
32 PA + VSD	7	0	0	34	1 (2.9)	2 (5.9)	112	2 (1.8)	4 (3.6)	1	0	0	154	3 (1.9)	6 (3.9)
33 DORV	14	1 (7.1)	1 (7.1)	91	4 (4.4)	4 (4.4)	96	1 (1.0)	1 (1.0)	7	0	0	208	6 (2.9)	6 (2.9)
34 TGA (simple)	99	0	3 (3.0)	5	0	0	8	0	0	1	0	0	113	0	3 (2.7)
35 +VSD	32	2 (6.3)	3 (9.4)	12	0	0	10	0	0	0	0	0	54	2 (3.7)	3 (5.6)
36 +VSD + PS	3	0	1 (33.3)	11	0	0	22	0	0	2	0	0	38	0	1 (2.6)
37 Corrected TGA	2	0	0	12	0	0	52	1 (1.9)	1 (1.9)	9	0	0	75	1 (1.3)	1 (1.3)
38 Truncus arteriosus	9	0	0	15	3 (20.0)	3 (20.0)	10	0	0	0	0	0	34	3 (8.8)	3 (8.8)
39 SV	30	4 (13.3)	8 (26.7)	160	8 (5.0)	11 (6.9)	306	6 (2.0)	6 (2.0)	20	2 (10.0)	3 (15.0)	516	20 (3.9)	28 (5.4)
40 TA	1	0	0	39	1 (2.6)	1 (2.6)	67	1 (1.5)	1 (1.5)	11	1 (9.1)	1 (9.1)	118	3 (2.5)	3 (2.5)
41 HLHS	50	16 (32.0)	21 (42.0)	88	12 (13.6)	16 (18.2)	51	1 (2.0)	1 (2.0)	0	0	0	189	29 (15.3)	38 (20.1)
42 Aortic valve lesion	5	0	0	21	1 (4.8)	2 (9.5)	91	1 (1.1)	1 (1.1)	20	0	0	137	2 (1.5)	3 (2.2)
43 Mitral valve lesion	1	1 (100.0)	1 (100.0)	62	2 (3.2)	3 (4.8)	65	0	0	16	0	0	144	3 (2.1)	4 (2.8)
44 Ebstein	8	2 (25.0)	2 (25.0)	17	0	0	21	0	0	18	1 (5.6)	2 (11.1)	64	3 (4.7)	4 (6.3)
45 Coronary disease	1	1 (100.0)	1 (100.0)	11	2 (18.2)	3 (27.3)	12	0	0	21	0	0	45	3 (6.7)	4 (8.9)
46 Others	15	3 (20.0)	3 (20.0)	29	2 (6.9)	2 (6.9)	37	2 (5.4)	2 (5.4)	8	1 (12.5)	1 (12.5)	89	8 (9.0)	8 (9.0)
47 Redo VSD	0	0	0	2	0	0	15	0	0	14	0	0	31	0	0
48 PS release	1	0	0	8	1 (12.5)	1 (12.5)	56	0	0	8	0	0	73	1 (1.4)	1 (1.4)
49 RV-PA conduit replace	0	0	0	1	0	0	41	0	0	26	1 (3.8)	1 (3.8)	68	1 (1.5)	1 (1.5)
50 Others	0	0	0	48	9 (18.8)	13 (27.1)	67	3 (4.5)	3 (4.5)	36	4 (11.1)	4 (11.1)	151	16 (10.6)	20 (13.2)
Total	534	52 (9.7)	73 (13.7)	2,168	64 (3.0)	84 (3.9)	3,254	26 (0.8)	29 (0.9)	1,304	19 (1.5)	22 (1.7)	7,260	161 (2.2)	208 (2.9)

(), % mortality; CPB, cardiopulmonary bypass; PDA, patent ductus arteriosus; VSD, ventricular septal defect; DORV, double outlet right ventricle; AVSD, atrioventricular septal defect; TGA, transposition of great arteries; SV, single ventricle; Interrupt. of Ao., interruption of aorta; PS, pulmonary stenosis; PA-IVS, pulmonary atresia with intact ventricular septum; TAPVR, total anomalous pulmonary venous return; PAPVR, partial anomalous pulmonary venous return; ASD, atrial septal defect; TOF, tetralogy of Fallot; DCRV, double-chambered right ventricle; TA, tricuspid atresia; HLHS, hypoplastic left heart syndrome; RV-PA, right ventricle–pulmonary artery

(2) CPB (–) (total 2,086)

in 2007

		Neonate			Infant			1–17 Years			≥18 Years			Total		
		Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1	PDA	319	6 (1.9)	8 (2.5)	192	0	0	95	0	0	10	0	0	616	6 (1.0)	8 (1.3)
2	Coarctation (simple)	19	0	0	19	0	0	8	0	0	5	0	0	51	0	0
3	+VSD	30	0	0	24	0	0	3	0	0	0	0	0	57	0	0
4	+DORV	13	0	0	5	0	0	0	0	0	0	0	0	18	0	0
5	+AVSD	4	1 (25.0)	1 (25.0)	2	0	0	0	0	0	0	0	0	6	1 (16.7)	1 (16.7)
6	+TGA	4	0	0	1	0	0	0	0	0	0	0	0	5	0	0
7	+SV	14	0	0	2	0	0	0	0	0	0	0	0	16	0	0
8	+Others	5	1 (20.0)	1 (20.0)	4	0	1 (25.0)	0	0	0	0	0	0	9	1 (11.1)	2 (22.2)
9	Interrupt. of Ao (simple)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	+VSD	15	0	0	2	0	0	0	0	0	0	0	0	17	0	0
11	+DORV	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0
12	+Truncus	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
13	+TGA	1	1 (100.0)	1 (100.0)	0	0	0	0	0	0	0	0	0	1	1 (100.0)	1 (100.0)
14	+Others	8	1 (12.5)	1 (12.5)	1	0	0	0	0	0	0	0	0	9	1 (11.1)	1 (11.1)
15	Vascular ring	2	0	0	8	0	0	6	0	0	0	0	0	16	0	1 (6.3)
16	PS	2	0	0	2	0	0	0	0	0	0	0	0	4	0	0
17	PA-IVS or critical PS	31	1 (3.2)	1 (3.2)	26	2 (7.7)	4 (15.4)	1	0	0	0	0	0	58	3 (5.2)	5 (8.6)
18	TAPVR	2	0	0	2	0	1 (50.0)	5	0	0	0	0	0	9	0	1 (11.0)
19	PAPVR ± ASD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	ASD	0	0	0	0	0	0	0	0	0	7	1 (14.3)	1 (14.3)	7	1 (14.3)	1 (14.3)
21	Cor triatriatum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	AVSD (partial)	0	0	0	2	0	0	1	0	0	0	0	0	3	0	0
23	AVSD (complete)	10	0	0	65	1 (1.5)	3 (4.6)	1	0	0	0	0	0	76	1 (1.3)	3 (3.9)
24	+TOF or DORV	7	0	0	7	0	0	1	0	0	0	0	0	15	0	0
25	+Others	4	0	0	1	1 (100.0)	1 (100.0)	1	0	0	0	0	0	6	1 (16.7)	1 (16.7)
26	VSD (subarterial)	4	0	0	11	0	0	0	0	0	0	0	0	15	0	0
27	VSD (perimemb./muscular)	24	1 (4.2)	1 (4.2)	66	1 (1.5)	2 (3.0)	2	0	0	0	0	0	92	2 (2.2)	3 (3.3)
28	VSD + PS	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0
29	DCRV ± VSD	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
30	Aneurysm of sinus Valsalva	0	0	0	7	0	0	1	0	0	0	0	0	8	0	0
31	TOF	24	0	0	100	3 (3.0)	3 (3.0)	23	0	0	3	0	0	150	3 (2.0)	3 (2.0)
32	PA + VSD	22	0	1 (4.5)	68	0	0	26	1 (3.8)	1 (3.8)	2	0	0	118	1 (0.8)	2 (1.7)
33	DORV	36	1 (2.8)	2 (5.6)	69	0	0	8	0	0	0	0	0	113	1 (0.9)	2 (1.8)
34	TGA (simple)	4	0	0	5	0	0	1	0	0	0	0	0	10	0	0
35	+VSD	1	0	0	1	0	0	1	0	0	0	0	0	3	0	0
36	+VSD + PS	3	0	0	12	0	0	3	0	0	0	0	0	18	0	0
37	Corrected TGA	8	1 (12.5)	1 (12.5)	26	0	0	6	0	0	1	0	0	41	1 (2.4)	1 (2.4)
38	Truncus arteriosus	9	0	0	6	0	0	0	0	0	0	0	0	15	0	0
39	SV	65	2 (3.1)	2 (3.1)	85	1 (1.2)	1 (1.2)	24	0	0	2	1 (50.0)	1 (50.0)	176	4 (2.3)	4 (2.3)
40	TA	19	0	0	21	1 (4.8)	1 (4.8)	3	0	0	0	0	0	43	1 (2.3)	1 (2.3)
41	HLHS	61	3 (4.9)	6 (9.8)	18	1 (5.6)	1 (5.6)	6	0	0	0	0	0	85	4 (4.7)	7 (8.2)
42	Aortic valve lesion	1	0	0	2	1 (50.0)	1 (50.0)	0	0	0	0	0	0	3	1 (33.3)	1 (33.3)
43	Mitral valve lesion	0	0	0	1	0	0	2	0	0	0	0	0	3	0	0
44	Ebstein	5	2 (40.0)	2 (40.0)	8	0	0	0	0	0	0	0	0	13	2 (15.4)	2 (15.4)
45	Coronary disease	2	0	0	8	0	0	5	0	0	3	0	0	18	0	0
46	Others	10	1 (10.0)	1 (10.0)	35	0	0	53	1 (1.9)	1 (1.9)	3	0	0	101	2 (2.0)	2 (2.0)
47	Redo VSD	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
48	PS release	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
49	RV-PA conduit replace	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
50	Others	2	1 (50.0)	1 (50.0)	22	0	0	21	0	0	6	0	0	51	1 (2.0)	1 (2.0)
	Total	797	23 (2.9)	31 (3.9)	937	12 (1.3)	19 (2.0)	308	2 (0.6)	2 (0.6)	44	2 (4.5)	2 (44.0)	2,086	39 (1.9)	54 (2.6)

(), % mortality; CPB, cardiopulmonary bypass; PDA, patent ductus arteriosus; VSD, ventricular septal defect; DORV, double outlet right ventricle; AVSD, atrioventricular septal defect; TGA, transposition of great arteries; SV, single ventricle; Interrupt. of Ao., interruption of aorta; PS, pulmonary stenosis; PA-IVS, pulmonary atresia with intact ventricular septum; TAPVR, total anomalous pulmonary venous return; PAPVR, partial anomalous pulmonary venous return; ASD, atrial septal defect; TOF, tetralogy of Fallot; DCRV, double-chambered right ventricle; TA, tricuspid atresia; HLHS, hypoplastic left heart syndrome; RV-PA, right ventricle–pulmonary artery

(3) Main procedures

in 2007

		Neonate			Infant			1–17 Years		
		Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1	SP Shunt	180	3 (1.7)	4 (2.2)	420	14 (3.3)	14 (3.3)	82	2 (2.4)	2 (2.4)
2	PAB	271	12 (4.4)	18 (6.6)	235	7 (3.0)	10 (4.3)	9	0	0
3	Bidirectional Glenn or hemi-Fontan ± α	2	0	0	225	5 (2.2)	9 (4.0)	169	5 (3.0)	5 (3.0)
4	PA reconstruction/repair (including redo)	6	0	0	81	0	0	101	1 (1.0)	1 (1.0)
5	RVOT reconstruction/repair	5	0	0	105	1 (1.0)	2 (1.9)	227	0	0
6	Rastelli procedure	4	0	0	25	0	0	87	3 (3.4)	4 (4.6)
7	Arterial switch procedure	145	3 (2.1)	12 (8.3)	22	1 (4.5)	1 (4.5)	2	0	0
8	Atrial switch procedure	0	0	0	1	0	0	2	0	0
9	Double switch procedure	0	0	0	0	0	0	7	0	0
10	Repair of anomalous origin of CA	1	1 (100.0)	1 (100.0)	11	1 (9.1)	2 (18.2)	8	0	0
11	Closure of coronary AV fistula	0	0	0	7	0	0	7	0	0
12	Fontan/TCPC	0	0	0	7	0	0	387	3 (0.8)	4 (1.0)
13	Norwood procedure	51	16 (31.4)	20 (39.2)	71	7 (9.9)	12 (16.9)	4	0	0
14	Ventricular septation	1	0	1 (100.0)	0	0	0	0	0	0
15	Left side AV valve repair (including redo)	0	0	0	65	2 (3.1)	2 (3.1)	93	0	0
16	Left side AV valve replace (including redo)	1	1 (100.0)	1 (100.0)	18	1 (5.6)	2 (11.1)	33	0	0
17	Right side AV valve repair (including redo)	3	0	0	23	2 (8.7)	2 (8.7)	35	0	0
18	Right side AV valve replace (including redo)	0	0	0	0	0	0	5	0	0
19	Common AV valve repair (including redo)	5	0	1 (20.0)	22	6 (27.3)	6 (27.3)	18	0	1 (5.6)
20	Common AV valve replace (including redo)	0	0	0	2	0	0	2	0	0
21	Repair of supraaortic stenosis	0	0	0	4	1 (25.0)	1 (25.0)	8	0	0
22	Repair of subaortic stenosis (including redo)	1	0	0	11	1 (9.0)	1 (9.0)	36	2 (5.6)	2 (5.6)
23	Aortic valve plasty ± VSD closure	8	0	0	7	0	1 (14.3)	19	0	0
24	Aortic valve replacement	1	1 (100.0)	1 (100.0)	3	1 (33.3)	1 (33.3)	28	0	0
25	AVR with annular enlargement	0	0	0	3	0	0	12	0	0
26	Aortic root replace (except Ross)	1	0	0	0	0	0	4	0	0
27	Ross procedure	1	0	0	1	0	0	26	1	1
	Total	687	37 (5.4)	59 (8.6)	1,369	50 (3.7)	66 (4.8)	1,411	17 (1.2)	20 (1.4)

		≥18 Years			Total		
		Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1	SP Shunt	8	0	0	690	19 (2.8)	20 (2.9)
2	PAB	0	0	0	515	19 (3.7)	28 (5.4)
3	Bidirectional Glenn or hemi-Fontan ± α	10	0	0	406	10 (2.5)	14 (3.4)
4	PA reconstruction/repair (including redo)	11	0	0	199	1 (0.5)	1 (0.5)
5	RVOT reconstruction/repair	29	0	0	366	1 (0.3)	2 (0.5)
6	Rastelli procedure	8	0	0	124	3 (2.4)	4 (3.2)
7	Arterial switch procedure	1	0	0	170	4 (2.4)	13 (7.6)
8	Atrial switch procedure	0	0	0	3	0	0
9	Double switch procedure	0	0	0	7	0	0
10	Repair of anomalous origin of CA	7	0	0	27	2 (7.4)	3 (11.1)
11	Closure of coronary AV fistula	19	0	0	33	0	0
12	Fontan/TCPC	41	4 (9.8)	6 (14.6)	435	7 (1.6)	10 (2.3)
13	Norwood procedure	0	0	0	126	23 (18.3)	32 (25.4)
14	Ventricular septation	0	0	0	1	0	1 (100.0)
15	Left side AV valve repair (including redo)	23	0	0	181	2 (1.1)	2 (1.1)
16	Left side AV valve replace (including redo)	14	0	0	66	2 (3.0)	3 (4.5)
17	Right side AV valve repair (including redo)	34	0	0	95	2 (2.1)	2 (2.1)
18	Right side AV valve replace (including redo)	12	0	1 (8.3)	17	0	1 (5.9)
19	Common AV valve repair (including redo)	1	0	0	46	6 (13.0)	8 (17.4)
20	Common AV valve replace (including redo)	0	0	0	4	0	0
21	Repair of supraaortic stenosis	0	0	0	12	1 (8.3)	1 (8.3)
22	Repair of subaortic stenosis (including redo)	3	0	0	51	3 (5.9)	3 (5.9)
23	Aortic valve plasty ± VSD closure	3	0	0	37	0	1 (2.7)
24	Aortic valve replacement	21	1 (4.8)	1 (4.8)	53	3 (5.7)	3 (5.7)
25	AVR with annular enlargement	3	1 (33.3)	1 (33.3)	18	1 (5.6)	1 (5.6)
26	Aortic root replace (except Ross)	3	0	0	8	0	0
27	Ross procedure	3	0	0	31	1	1
	Total	254	6 (2.4)	9 (3.5)	3,721	110 (3.0)	154 (4.1)

(), % mortality; SP, systemic–pulmonary; PAB, pulmonary artery banding; PA, pulmonary artery; RVOT, right ventricular outflow tract; CA, coronary artery; AV fistula, arteriovenous fistula; TCPC, total cavopulmonary connection; AV valve, atrioventricular valve; VSD, ventricular septal defect; AVR, aortic valve replacement

Table 2 Acquired [total (1) + (2) + (4) + (5) + (6) + (7) + isolated ope. for arrhythmia in (3): 34,907]

(1) Valvular heart disease (total 15,218)

in 2007

	Valve	Cases	Operation					30-Day mortality		Hospital mortality		Redo		
			Mechanical	Bioprosthesis	Ross procedure	Repair	With CABG	Replace	Repair	Replace	Repair	Cases	30-Day mortality	Hospital mortality
Isolated	A	6,546	2,586	3,886	2	72	1,310	139 (2.1)	1 (1.4)	185 (2.9)	1 (1.4)	263	24 (9.1)	30 (11.4)
	M	4,007	1,049	589		2,369	585	62 (3.8)	17 (0.7)	94 (5.7)	34 (1.4)	312	23 (7.4)	32 (10.3)
	T	217	20	59		138	19	7 (8.9)	4 (2.9)	10 (12.7)	6 (4.3)	60	5 (8.3)	8 (13.3)
	P	3	0	3		0	0	0	0	0	0	2	0	0
A + M	A	1,182	565	590		27	165	58 (4.9)		85 (7.2)		82	4 (4.9)	5 (6.1)
	M		422	236		524								
A + T	A	184	72	109		3	25	9 (4.9)		14 (7.6)		14	1 (7.1)	2 (14.3)
	T		1	2		181								
M + T	M	2,377	776	539		1,062	229	65 (2.7)		105 (4.4)		220	11 (5.0)	20 (9.1)
	T		14	44		2,319								
A + M + T	A	657	338	309		10	58	28 (4.3)		43 (6.5)		64	6 (9.4)	6 (9.4)
	M		261	150		246								
	T		13	5		639								
Others		45	20	11		19	2	2 (4.4)		4 (8.9)		17	0	1 (5.9)
Total		15,218	6,137	6,532	2	7,609	2,393	392 (2.6)		581 (3.8)		1,034	74 (7.2)	104 (10.1)

(), % mortality; CABG, coronary artery bypass grafting; A, aortic valve; M, mitral valve; T, tricuspid valve; P, pulmonary valve
 Number of redo cases is included in the total case number of 15,218

(2) Ischemic heart disease [total (A) + (B) + (C): 18,181]

(A) Isolated CABG [total (a) + (b): 17,295]

(a) On-pump CABG (including planned on-pump beating-heart CABG at the time of incision) (total 6,316)

in 2007

	Primary, elective			Primary, emergency			Redo, elective		
	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths
1VD	113	0	0	38	6 (15.8)	7 (18.4)	13	0	0
2VD	784	11 (1.4)	19 (2.4)	132	13 (9.8)	18 (13.6)	18	0	0
3VD	2,586	32 (1.2)	50 (1.9)	423	30 (7.1)	43 (10.2)	46	1 (2.2)	1 (2.2)
LMT	1,484	18 (1.2)	25 (1.7)	565	31 (5.5)	48 (8.5)	17	0	1 (5.9)
Kawasaki	5	0	0	0	0	0	1	0	0
Unspecified	42			22	3 (13.6)	3 (13.6)			
Total	5,014	61 (1.2)	94 (1.9)	1,180	83 (7.0)	119 (10.1)	95	1 (1.1)	2 (2.1)
Hemodialysis	231	7 (3.0)	13 (5.6)	77	9 (11.7)	14 (18.2)	5	0	0

	Redo, emergency			Arterial graft only	Artery graft + SVG	SVG only	Others	Uncertain
	Cases	30-Day mortality	Hospital deaths					
1VD	8	2 (25.0)	2 (25.0)	98	20	53	0	1
2VD	2	0	0	262	596	71	1	6
3VD	8	2 (25.0)	3 (37.5)	368	2,557	109	0	29
LMT	9	2 (22.2)	2 (22.2)	351	1,600	113	0	11
Kawasaki	0	0	0	5	1	0	0	0
Unspecified								64
Total	27	6 (22.2)	7 (25.9)	1,084	4,774	346	1	111
Hemodialysis	3	0	0	36	244	21	0	15

(), % mortality; CABG, coronary artery bypass grafting; 1VD, one-vessel disease; 2VD, two-vessel disease; 3VD, three-vessel disease; LMT, left main trunk; SVG, saphenous vein graft
 LMT includes LMT alone or LMT with other branch diseases

in 2007

	Primary, elective			Primary, emergency			Redo, elective			Redo, emergency		
	Cases	30-day Mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths
Arrest	3,768	46 (1.2)	66 (1.8)	693	40 (5.8)	56 (8.1)	52	1 (1.9)	1 (1.9)	8	2 (25.0)	2 (25.0)
Beating	1,148	14 (1.2)	23 (2.0)	458	43 (9.4)	63 (13.8)	39	0	1 (2.6)	17	4 (23.5)	5 (29.4)
Unspecified	56	1	5	7	3	3	4	0	0	2	0	0

(b) Off-pump CABG (total 10,979)

(The present section also includes cases of planned off-pump CABG in which, during surgery, the change is made to on-pump CABG or an on-pump beating-heart procedure) in 2007

	Primary, elective			Primary, emergency			Redo, elective		
	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths	Cases	30-Day mortality	Hospital deaths
1VD	771	4 (0.5)	7 (0.9)	94	5 (5.3)	8 (8.5)	47	1 (2.1)	1 (2.1)
2VD	1,867	8 (0.4)	14 (0.7)	207	12 (5.8)	12 (5.8)	34	2 (5.9)	2 (5.9)
3VD	4,083	28 (0.7)	50 (1.2)	419	15 (3.6)	25 (6.0)	49	1 (2.0)	1 (2.0)
LMT	2,703	25 (0.9)	39 (1.4)	577	22 (3.8)	32 (5.5)	31	1 (3.2)	2 (6.5)
Kawasaki	9	0	0	0	0	0	0	0	0
unspecified	56			10			1		
Total	9,489	65 (0.7)	110 (1.2)	1,307	54 (4.1)	77 (5.9)	162	5 (3.1)	6 (3.7)
Hemodialysis	655	8 (1.2)	24 (3.7)	103	15 (14.6)	19 (18.4)	12	3 (25.0)	3 (25.0)

	Redo, emergency			Arterial graft only	Arterial graft + SVG	SVG only	Others	Uncertain
	Cases	30-Day mortality	Hospital deaths					
1VD	2	0	0	747	71	91	2	3
2VD	5	0	1 (20.0)	1,077	956	71	0	9
3VD	5	1 (20.0)	1 (20.0)	1,448	2,995	97	0	16
LMT	9	0	2 (22.2)	1,364	1,856	91	0	9
Kawasaki	0	0	0	7	2	0	0	0
Unspecified								66
Total	21	1 (4.8)	4 (19.0)	4,643	5,880	350	2	103
Hemodialysis	2	0	0	232	495	38	0	7

(), % mortality; CABG, coronary artery bypass grafting; 1VD, one-vessel disease; 2VD, two-vessel disease; 3VD, three-vessel disease; LMT, left main trunk; SVG, saphenous vein graft
LMT includes LMT alone or LMT with other branch diseases

(c) Includes cases of conversion, during surgery, from off-pump CABG to on-pump CABG or on-pump beating-heart CABG (total 301) in 2007

	Primary, elective			Primary, emergency			Redo, elective			Redo, emergency		
	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
Conversion to on-pump CABG arrest heart	44	3 (6.8)	5 (11.4)	4	1 (25.0)	2 (50.0)	1	0	1 (100.0)	0	0	0
Conversion to on-pump beating-heart CABG	195	13 (6.7)	17 (8.7)	49	5 (10.2)	6 (12.2)	7	0	0	1	0	1 (100.0)
Total	239	16 (6.7)	22 (9.2)	53	6 (11.3)	8 (15.1)	8	0	1 (12.5)	1	0	1 (100.0)
Hemodialysis	20	5 (25.0)	7 (35.0)	6	3 (50.0)	3 (50.0)	0	0	0	0	0	0

(), % mortality; CABG, coronary artery bypass grafting

(B) Operation for complications of MI (total 874)

in 2007

	Chronic			Acute			Concomitant operation		
	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	CABG	MVP	MVR
Infarctectomy or aneurysmectomy	440	28 (6.4)	40 (9.1)	18	5 (27.8)	5 (27.8)	334	154	23
VSP closure	37	2 (5.4)	4 (10.8)	225	58 (25.8)	75 (33.3)	84	3	5
Cardiac rupture	11	1 (9.1)	2 (18.2)	209	68 (32.5)	78 (37.3)	36	1	2
Mitral regurgitation									
1) Papillary muscle rupture	4	0	0	39	12 (30.8)	15 (38.5)	18	8	22
2) Ischemic	364	13 (3.6)	29 (8.0)	36	5 (13.9)	10 (27.8)	363	272	54
Others	18	1 (5.6)	2 (11.1)	12	4 (33.3)	4 (33.3)	9	0	0
Total	874	45 (5.1)	77 (8.8)	539	152 (28.2)	187 (34.7)	844	438	106

(), % mortality; MI, myocardial infarction; CABG, coronary artery bypass grafting; MVP, mitral valve repair; MVR, mitral valve replacement; VSP, ventricular septal perforation

Acute, within 2 weeks from the onset of myocardial infarction

(C) TMLR (total 12)

in 2007

	Cases	30-Day mortality	Hospital mortality
Isolated	1	0	0
With CABG	11	1 (9.1)	1 (11.0)
Total	12	1 (8.3)	1 (12.0)

TMLR, transmyocardial laser revascularization

(3) Operation for arrhythmia (total 3,649)

in 2007

	Cases	30-day mortality	Hospital mortality	Concomitant operation						
				Isolated	Congenital	Valve	IHD	Other	Multiple combination	
									2 Categories	3 Categories
Maze	3,083	47 (1.5)	66 (2.1)	26	193	2,682	298	128	227	19
For WPW	4	0	0	0	1	1	2	0	0	0
For ventricular tachyarrhythmia	111	5 (4.5)	8 (7.2)	51	3	7	42	11	3	0
Others	451	2 (0.4)	8 (1.8)	323	10	96	27	7	12	0
Total	3,649	54 (1.5)	82 (2.2)	400	207	2,786	369	146	242	19

(), % mortality; WPW, Wolff-Parkinson-White syndrome; IHD, ischemic heart disease

Except for 400 isolated cases, all remaining 3,249 cases are doubly allocated, one for this subgroup and the other for the subgroup corresponding to the concomitant operations

(4) Operation for constrictive pericarditis (total 139)

in 2007

	CPB (+)			CPB (-)		
	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
Total	56	4 (7.1)	6 (10.7)	83	1 (1.2)	3 (3.6)

(), % mortality; CPB, cardio-pulmonary Bypass

(5) Cardiac tumor (total 445)

in 2007

	Cases	30-Day mortality	Hospital mortality	Concomitant operation			
				AVR	MVR	CABG	Others
Myxoma	326	2 (0.6)	4 (1.2)	4	2	16	30
Others	119	5 (4.2)	8 (6.7)	3	3	4	23
Total	445	7 (1.6)	12 (2.7)	7	5	20	53

(), % mortality; AVR, atrial valve replacement; MVR, mitral valve replacement; CABG, coronary artery bypass grafting

(6) HOCM and DCM (total 150)

in 2007

	Cases	30-Day mortality	Hospital mortality	Concomitant operation			
				AVR	MVR	MVP	CABG
Myectomy	54	2 (3.7)	2 (3.7)	20	18	6	3
Myotomy	5	0	0	1	2	1	1
No resection	46	3 (6.5)	5 (10.9)	4	11	31	7
Volume reduction surgery of the left ventricle	45	6 (13.3)	11 (24.4)	2	5	26	11
Total	150	11 (7.3)	18 (12.0)	27	36	64	22

(), % mortality; HOCM, hypertrophic obstructive cardiomyopathy; DCM, dilated cardiomyopathy; AVR, aortic valve replacement; MVR, mitral valve replacement; MVP, mitral valve repair; CABG, coronary artery bypass grafting

(7) Other open-heart operation (total 374)

in 2007

	Cases	30-Day mortality	Hospital mortality
Total	374	31 (8.3)	38 (10.2)

(), % mortality

Table 3 Thoracic aortic aneurysm (total 10,081)

(1) Dissection (total 4,549)

in 2007

Stanford type	Acute						Chronic		
	A			B			A		
Replaced site	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1. Ascending Ao	1,768	155 (8.8)	193 (10.9)	4	0	0	184	3 (1.6)	9 (4.9)
2. Aortic root	171	27	32	0	0	0	55	3	3
3. Ascending Ao + arch	894	107 (12.0)	130 (14.5)	17	2 (11.8)	2 (11.8)	243	8 (3.3)	13 (5.3)
4. Arch + descending Ao	62	4 (6.5)	4 (6.5)	17	3 (17.6)	5 (29.4)	27	4 (14.8)	5 (18.5)
5. Aortic root + ascending Ao + arch	60	14 (23.3)	17 (28.3)	1	1 (100.0)	1 (100.0)	21	0	1 (4.8)
6. Descending Ao	10	2	3	39	6	6	49	6	8
7. Thoracoabdominal Ao	6	1 (16.7)	1 (16.7)	9	3 (33.3)	4 (44.4)	37	3 (8.1)	5 (13.5)
8. Extraanatomical bypass	5	2 (40.0)	2 (40.0)	23	2 (8.7)	3 (13.0)	1	0	0
9. Stent graft ^{*a}	40	2 (5.0)	2 (5.0)	35	2 (5.7)	3 (8.6)	33	2 (6.1)	4 (12.1)
1) Transluminal ^{*b}	12	0	0	28	1 (3.6)	2 (7.1)	15	0	1
2) Open stent: a) With total arch ^{*c}	2	0	0	2	1 (50.0)	1 (50.0)	1	0	0 (6.7)
b) Without total arch ^{*d}	26	2 (7.7)	2 (7.7)	5	0	0	17	2 (11.8)	3 (17.6)
Total	3,016	314 (10.4)	384 (12.7)	145	19 (13.1)	24 (16.6)	650	29 (4.5)	48 (7.4)

Stanford type	Chronic			Concomitant operation					Redo		
	B			AVP	AVR	MVP	MVR	CABG	Cases	30-Day mortality	Hospital mortality
Replaced site	Cases	30-Day mortality	Hospital mortality	AVP	AVR	MVP	MVR	CABG	Cases	30-Day mortality	Hospital mortality
1. Ascending Ao	4	0	0	192	74	5	6	86	41	3 (7.3)	3 (7.3)
2. Aortic root	6	0	0	33	99	3	3	35	27	4	4
3. Ascending Ao + arch	56	2 (3.6)	4 (7.1)	59	30	4	3	66	60	10 (16.7)	11 (18.3)
4. Arch + descending Ao	103	16 (15.5)	19 (18.4)	2	4	0	0	3	20	2 (10.0)	4 (20.0)
5. Aortic root + ascending Ao + arch	4	0	1 (25.0)	4	39	2	0	13	11	1 (9.1)	3 (27.3)
6. Descending Ao	244	5	11	0	1	0	0	5	26	3	3
7. Thoracoabdominal Ao	149	15 (10.1)	19 (12.8)	0	0	0	0	0	24	1 (4.2)	2 (8.3)
8. Extraanatomical bypass	16	0	0	0	0	0	0	0	0	0	0
9. Stent graft ^{*a}	156	4 (2.6)	5 (3.2)	0	1	0	0	4	39	1 (2.6)	2 (5.1)
1) Transluminal ^{*b}	127	1 (0.8)	1 (0.8)	0	0	0	0	0	26	0	0
2) Open stent: a) With total arch ^{*c}	12	1 (8.3)	1 (8.3)	0	0	0	0	0	1	0	0
b) Without total arch ^{*d}	17	2 (11.8)	3 (17.6)	0	1	0	0	4	12	1 (8.3)	2 (16.7)
Total	738	42 (5.7)	59 (8.0)	290	248	14	12	212	248	25 (10.1)	32 (12.9)

(), % mortality; Ao, aorta; AVP, aortic valve repair; AVR, aortic valve replacement; MVP, mitral valve repair; MVR, mitral valve replacement; CABG, coronary artery bypass grafting

Acute, within 2 weeks from the onset

*a = *b + *c + *d

(2) Nondissection (total 5,532)

in 2007

Replaced site	Unruptured			Ruptured			Concomitant operation		
	Cases	30-day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality	AVP	AVR	MVP
1. Ascending Ao	818	20 (2.4)	22 (2.7)	37	3 (8.1)	5 (13.5)	63	527	30
2. Aortic root	641	17	26	19	2	4	95	409	33
3. Ascending Ao + arch	1,646	63 (3.8)	102 (6.2)	214	47 (22.0)	58 (27.1)	14	94	10
4. Arch + descending Ao	196	11 (5.6)	18 (9.2)	50	11 (22.0)	15 (30.0)	0	5	0
5. Aortic root + ascendng Ao + arch	96	6 (6.3)	7 (7.3)	1	0	0	1	51	7
6. Descending Ao	509	20 (3.9)	30 (5.9)	141	27 (19.1)	33 (23.4)	0	2	0
7. Thoracoabdominal Ao	369	24	38	67	14	18	0	2	0
8. Extraanatomical bypass	15	1 (6.7)	2 (13.3)	4	1 (25.0)	1 (25.0)	0	1	0
9. Stent graft* ^a	607	14 (2.3)	21 (3.5)	102	17 (16.7)	23 (22.5)	0	5	0
1) Transluminal* ^b	467	9 (1.9)	13 (2.8)	80	12 (15.0)	17 (21.3)	0	0	0
2) Open stent: a) With total arch* ^c	39	1 (2.6)	2 (5.1)	5	0	0	0	0	0
b) Without total arch* ^d	96	4 (4.2)	6 (6.3)	16	5 (31.3)	6 (37.5)	0	5	0
Unspecified	5			1					
Total	4,897	176 (3.6)	266 (5.4)	635	122 (19.2)	157 (24.7)	173	1,096	80

Replaced site	Concomitant operation		Redo			CPB(-)		
	MVR	CABG	Cases	30-Day mortality	Hospital mortality	Cases	30-Day mortality	Hospital mortality
1. Ascending Ao	26	105	60	8 (13.3)	11 (18.3)	4	0	0
2. Aortic root	9	85	71	5	7	1	0	0
3. Ascending Ao + arch	10	319	71	7 (9.9)	11 (15.5)	4	0	0
4. Arch + descending Ao	1	17	21	3 (14.3)	4 (19.0)	1	0	0
5. Aortic root + ascendng Ao + arch	1	9	10	4 (40.0)	4 (40.0)	1	1 (100.0)	1 (100.0)
6. Descending Ao	0	14	37	6 (16.2)	8 (21.6)	9	1 (11.1)	1 (11.1)
7. Thoracoabdominal Ao	0	4	24	3	6	4	0	0
8. Extraanatomical bypass	0	0	2	1 (50.0)	1 (50.0)	0	0	0
9. Stent graft* ^a	0	18	37	3 (8.1)	3 (8.1)	195	7 (3.6)	10 (5.1)
1) Transluminal* ^b	0	2	32	3 (9.4)	3 (9.4)	195	7 (3.6)	10 (5.1)
2) Open stent: a) With total arch* ^c	0	5	2	0	0	0	0	0
b) Without total arch* ^d	0	11	3	0	0	0	0	0
Unspecified						1		
Total	47	571	333	40 (12.0)	55 (16.5)	220	9 (4.1)	12 (5.5)

(), % mortality; Ao, aorta; AVP, aortic valve repair; AVR, aortic valve replacement; MVP, mitral valve repair; MVR, mitral valve replacement; CABG, coronary artery bypass grafting

*^a = *^b + *^c + *^d

Table 4 Pulmonary thromboembolism (total 135)

in 2007

	Cases	30-Day mortality	Hospital mortality
Acute	92	14 (15.2)	17 (18.5)
Chronic	43	4 (9.3)	4 (9.3)
Total	135	18 (13.3)	21 (15.6)

(), % mortality

Table 5 Assisted circulation (total 1,488)

in 2007

	Sites	VAD								
		Device			Results					
		Centrifugal	VAS	Others	Not weaned			Weaned		
					Ongoing	Dead	Transplant	Survived	Dead	Transplant
Postcardiotomy	Left	19	14	0	2	20 (60.6)	0	8	3 (9.1)	0
	Right	2	0	0	0	0 (0.0)	0	2	0	0
	Biventricular									
Congestive heart failure	Right	2	1	0	0	5 (100.0)	0	0	0	0
	Left	4	1	0						
	Biventricular									
Respiratory failure	Left	7	42	9	29	20 (40.8)	2	5	2 (4.1)	0
	Right	3	0	0	0	1	0	2	0	0
	Biventricular									
Respiratory failure	Right	11	3	0	0	11 (37.5)	1	1	0	1
	Left	0	14	0						
Total		48	75	9	31	57 (46.3)	3	18	5 (4.1)	1

	Sites	Heart-lung assist						Unspecified
		Method		Results				
		PCPS	Others	Not weaned		Weaned		
				Dead	Transplant	Dead	Survived	
Postcardiotomy	Left	469	34	280 (55.7)	0	72 (14.3)	151	
	Right							
	Biventricular							
Congestive heart failure	Right	731	47	404 (51.9)	0	110 (14.1)	263	
	Left							
	Biventricular							
Respiratory failure	Right	61	14	38 (50.7)	0	5 (6.7)	32	1
	Left							
Total		1,261	95	722 (53.2)	0	187 (13.8)	446	

(), % mortality; VAD, venricular assist device; VAS, ventricular assist system; PCPS, Percutaneous Cardiopulmonary Support

Table 6 Heart transplantation (total 10)

in 2007

	Cases	30-Day mortality	Hospital mortality
Heart transplantation	10	0	0
Heart and lung transplantation	0	0	0
Total	10	0	0

(), % mortality

Table 7 Pacemaker + ICD (total 17,194)

in 2007

	Pacemaker			ICD	
	Univentricular	Biventricular	CRTD	CRTD	ICD
Initial	2,742	6,511	318	594	1,122
Exchange	2,141	3,300	43	65	358
Total	4,883	9,811	361	659	1,480

ICD, implantable cardioverter-defibrillator; CRTD, cardiac resynchronization therapy device with incorporated ICD device