

CHAPTER 4 TREATMENT

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Summary

1. Elderly patients spent more days in CCU or ICU/CICU but similar length of admission in hospital following ACS.
2. Following STEMI, 7% of patients were treated with primary angioplasty and 74% received thrombolysis.
3. Thrombolysis was given more in the young age group and primary angioplasty was provided more in the elderly age group.
4. The mean door to needle time was 105mins and the median was 50mins. The mean door to balloon time was 226mins and the median was 117mins.
5. In NSTEMI/UA, male and younger patients tend to undergo more PCI compared to female, middle age and elderly patients.
6. About 93% of patients were prescribed with aspirin and 89% of patients received statins following ACS.

In this chapter, we have summarised the treatment given to the patients admitted with acute coronary syndrome (ACS) entered in the NCVS-ACS Registry from 2006 to 2010. This chapter will also describe the pattern of admission, revascularization therapy and pharmacological therapy in patients who were admitted with ACS.

Pattern of admission

The total number of days of admission was similar in all of the ACS spectrums. The median of total number of days of admission was five days in STEMI and NSTEMI and four days in unstable angina, which was noted to be consistent between years 2006 and 2010. [Table 4.1] The total days of admission was noted to be similar in all age group (young, middle age and elderly). [Table 4.2] There was no difference in the number of days spent in hospital in all three ethnic groups (Malay, Chinese and Indian) admitted with ACS. [Table 4.4]

The number of days spent in CCU or ICU/CICU was also similar in the entire ACS spectrum. Patients admitted with STEMI, NSTEMI and unstable angina spent a median of two to three days in CCU or ICU/CICU. This was observed in each year from 2006 to 2010. [Table 4.1] The number of days spent in CCU or ICU/CICU increase with age group and this was observed in all ACS spectrums. [Table 4.2] There was no difference in the number of days spent in CCU or ICU/CICU between gender and all three ethnic groups. [Table 4.3 & Table 4.4]

Revascularisation therapy

In patients presented with STEMI, 74% received thrombolysis at presentation and 7% of patients proceeded directly to primary angioplasty. Twelve percent of patients did not receive any primary revascularization therapy (thrombolysis/primary angioplasty) because of late presentation or missed diagnosis. Four percent of patients did not receive any thrombolysis because of contraindication. [Table 4.1] Thrombolysis was given more in males (75%) than females (66%) and primary angioplasty was noted to be similar in both genders. [Table 4.3] Thrombolysis was used more in the young age group (77%) as compared to the elderly age group (69%) and vice versa noted in the group proceeded to

primary angioplasty, higher in the elderly age group (7%) and lower in the younger age group (6%). [Table 4.2] The Chinese received the least thrombolysis but the most primary angioplasty as compared to the Malays and Indians. [Table 4.4] The mean door to needle time was 105mins and median 50mins. The mean door to balloon time was 226mins and median 117mins. [Table 4.5]

In NSTEMI/UA group, most of the patients were treated medically. About 13% of patients with NSTEMI and 6% of patients with unstable angina were treated with PCI on the same admission. Two percent of patients with NSTEMI and 1% of patients with UA underwent CABG on the same admission. [Table 4.1] Male gender and younger age group tend to undergo PCI more compared to female, middle age and elderly patients. There was no difference in patients treated with PCI following NSTEMI/UA between the different ethnic groups. [Table 4.8]

Pharmacological therapy

The use of aspirin was noted to be as high as 93% and up to 72% of patients received ADP antagonist in the entire ACS spectrum. There was no difference in the use of aspirin and ADP antagonist between different age groups, gender and ethnic groups. The use of LMWH was noted to be as high as 73% and unfractionated heparin up to 11%. LMWH was given more in unstable angina and NSTEMI patients than STEMI patients. GP IIb/IIIa receptor inhibitor usage was low (<5%) in the ACS spectrum. [Table 4.1]

Up to 89% of patients admitted with ACS were treated with statins and 68% of patients were on beta-blockers. [Table 4.1] Younger patients were more likely to receive beta-blockers compared to the elderly patients. ACE inhibitors were used in up to 63% and Angiotensin II receptor blocker in up to 11%. [Table 4.1] It was noted that more males received ACE inhibitors than females following ACS [Table 4.3 & Table 4.7] but there was no difference in the use of ACE inhibitors in different age groups and race. Up to 31% of patients received oral hypoglycaemic agent and up to 27% of patients were on insulin. More Indians were on oral hypoglycaemic agent and insulin as compared to Malays and Chinese. [Table 4.4] Diuretics were used in up to 26% and anti-arrhythmic agents were used in up to 8% of patients.

Table 4.1 Summary of treatments for patients with ACS by ACS stratum, NCVd-ACS Registry, 2006-2010

Year	2006-2008			2009			2010			2006-2010		
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
ACS Stratum												
Total	4647	2904	2320	1681	1046	867	1802	1008	591	8130	4958	3778
Total admission days**												
N	4360	2763	2208	1602	1016	846	1536	892	543	7498	4671	3597
Mean (SD)	6 (3)	6 (4)	5 (3)	6 (3)	6 (4)	5 (3)	6 (4)	6 (4)	4 (2)	6 (3)	6 (4)	5 (3)
Median (min, max)	5 (1, 30)	5 (1, 30)	4 (1, 30)	5 (1, 30)	5 (1, 30)	4 (1, 30)	5 (1, 30)	5 (1, 30)	4 (1, 27)	5 (1, 30)	5 (1, 30)	4 (1, 30)
IQR	3	3	2	2	3	2	2	4	2	2	3	2
Number of days on CCU												
N	3359	1119	336	1220	488	373	1223	280	57	5802	1887	766
Mean (SD)	3 (3)	3 (3)	3 (3)	3 (2)	4 (4)	3 (3)	3 (3)	4 (3)	3 (1)	3 (3)	4 (3)	3 (3)
Median (min, max)	3 (1, 29)	3 (1, 30)	2 (1, 24)	3 (1, 24)	3 (1, 30)	2 (1, 28)	3 (1, 30)	3 (1, 16)	2 (1, 7)	3 (1, 30)	3 (1, 30)	2 (1, 28)
IQR	2	2	3	2	3	2	2	3	1	2	2	2
Number of days on ICU/CICU												
N	108	155	40	36	22	6	23	12	7	167	189	53
Mean (SD)	3 (3)	3 (3)	3 (2)	3 (3)	4 (6)	2 (1)	3 (1)	3 (2)	2 (1)	3 (3)	4 (4)	3 (2)
Median (min, max)	2 (1, 17)	3 (1, 24)	3 (1, 11)	2 (2, 14)	3 (1, 24)	2 (1, 4)	3 (1, 5)	3 (1, 8)	2 (1, 4)	2 (1, 17)	3 (1, 24)	3 (1, 11)
IQR	2	2	3	2	2	2	2	2	3	2	2	3

Year	2006-2008			2009			2010			2006-2010		
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
ACS Stratum	4647	2904	2320	1681	1046	867	1802	1008	591	8130	4958	3778
Total												
Fibrinolytic therapy, No. (%)												
Given	3377 (73)			1258 (75)			1347 (75)			5982 (74)		
Not given-proceeded directly to primary angioplasty	319 (7)			90 (5)			140 (8)			549 (7)		
Not given-Contraindicated	188 (4)			82 (5)			64 (4)			334 (4)		
Not given-Missed thrombolysis	587 (13)			201 (12)			202 (11)			990 (12)		
Not given-Others***	176 (4)			50 (3)			49 (3)			275 (3)		
Cardiac catheterisation, No. (%)												
Yes	940 (20)	678 (23)	241 (10)	425 (25)	266 (25)	65 (7)	379 (21)	181 (18)	43 (7)	1744 (21)	1125 (23)	349 (9)
No	3562 (77)	2160 (74)	2046 (88)	1191 (71)	761 (73)	789 (91)	1334 (74)	785 (78)	526 (89)	6087 (75)	3706 (75)	3361 (89)
Number transferred to another centre	145 (3)	66 (2)	33 (1)	65 (4)	19 (2)	13 (1)	89 (5)	42 (4)	22 (4)	299 (4)	127 (3)	68 (2)
Percutaneous Coronary Intervention, No. (%)												
Yes	856 (18)	415 (14)	167 (7)	341 (20)	142 (14)	36 (4)	275 (15)	101 (10)	22 (4)	1472 (18)	658 (13)	225 (6)
No	3791 (82)	2489 (86)	2153 (93)	1340 (80)	904 (86)	831 (96)	1527 (85)	907 (90)	569 (96)	6658 (82)	4300 (87)	3553 (94)
CABG, No. (%)												
Yes	28 (1)	83 (3)	29 (1)	4 (0)	19 (2)	9 (1)	6 (0)	8 (1)	4 (1)	38 (0)	110 (2)	42 (1)
No	4619 (99)	2821 (97)	2291 (99)	1677 (100)	1027 (98)	858 (99)	1796 (100)	1000 (99)	587 (99)	8092 (100)	4848 (98)	3736 (99)

Year	2006-2008			2009			2010			2006-2010		
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
ACS Stratum	4647	2904	2320	1681	1046	867	1802	1008	591	8130	4958	3778
Pre-admission aspirin use, No. (%)												
Yes	880 (19)	1242 (43)	1151 (50)	383 (23)	550 (53)	446 (51)	363 (20)	426 (42)	325 (55)	1626 (20)	2218 (45)	1922 (51)
No	3303 (71)	1308 (45)	792 (34)	1218 (72)	477 (46)	400 (46)	1350 (75)	524 (52)	241 (41)	5871 (72)	2309 (47)	1433 (38)
Unknown	464 (10)	354 (12)	377 (16)	80 (5)	19 (2)	21 (2)	89 (5)	58 (6)	25 (4)	633 (8)	431 (9)	423 (11)
Pharmacological therapy given during admission, No. (%)												
Aspirin	4318 (93)	2560 (88)	2013 (87)	1578 (94)	978 (93)	815 (94)	1703 (95)	935 (93)	524 (89)	7599 (93)	4473 (90)	3352 (89)
ADP antagonist	3154 (68)	1798 (62)	1268 (55)	1309 (78)	850 (81)	708 (82)	1411 (78)	782 (78)	397 (67)	5874 (72)	3430 (69)	2373 (63)
GP receptor inhibitor	165 (4)	99 (3)	29 (1)	86 (5)	19 (2)	6 (1)	61 (3)	26 (3)	17 (3)	312 (4)	144 (3)	52 (1)
Unfractionated heparin	475 (10)	377 (13)	318 (14)	154 (9)	78 (7)	38 (4)	244 (14)	98 (10)	29 (5)	873 (11)	553 (11)	385 (10)
LMWH	1598 (34)	2040 (70)	1592 (69)	714 (42)	847 (81)	750 (87)	763 (42)	737 (73)	455 (77)	3075 (38)	3624 (73)	2797 (74)
Beta blocker	2957 (64)	1864 (64)	1598 (69)	1012 (60)	676 (65)	605 (70)	1021 (57)	607 (60)	376 (64)	4990 (61)	3147 (63)	2579 (68)
ACE inhibitor	2636 (57)	1529 (53)	1438 (62)	909 (54)	595 (57)	596 (69)	920 (51)	501 (50)	331 (56)	4465 (55)	2625 (53)	2365 (63)
Angiotensin II receptor blocker	221 (5)	307 (11)	203 (9)	116 (7)	131 (13)	75 (9)	114 (6)	122 (12)	69 (12)	451 (6)	560 (11)	347 (9)
Statin	4166 (90)	2530 (87)	2024 (87)	1468 (87)	878 (84)	747 (86)	1625 (90)	881 (87)	528 (89)	7259 (89)	4289 (87)	3299 (87)
Other lipid lowering agent	190 (4)	197 (7)	124 (5)	142 (8)	90 (9)	45 (5)	76 (4)	57 (6)	42 (7)	408 (5)	344 (7)	211 (6)
Diuretics	1187 (26)	1137 (39)	643 (28)	325 (19)	388 (37)	188 (22)	405 (22)	391 (39)	168 (28)	1917 (24)	1916 (39)	999 (26)
Calcium antagonist	318 (7)	626 (22)	489 (21)	109 (6)	203 (19)	145 (17)	94 (5)	226 (22)	140 (24)	521 (6)	1055 (21)	774 (20)
Oral hypoglycaemic agent	1053 (23)	842 (29)	702 (30)	356 (21)	303 (29)	301 (35)	379 (21)	282 (28)	182 (31)	1788 (22)	1427 (29)	1185 (31)
Insulin	1154 (25)	769 (26)	482 (21)	349 (21)	259 (25)	153 (18)	435 (24)	286 (28)	108 (18)	1938 (24)	1314 (27)	743 (20)
Anti-arrhythmic agent	359 (8)	224 (8)	100 (4)	78 (5)	91 (9)	27 (3)	149 (8)	72 (7)	24 (4)	586 (7)	387 (8)	151 (4)

Table 4.2 Treatments for patients with STEMI by age group (years), NCVd-ACS Registry, 2006-2010

Year	2006-2008			2009			2010			2006-2010		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	344	2555	1748	145	909	627	146	1006	650	635	4470	3025
Total admission days**												
N	324	2402	1634	136	877	589	128	857	551	588	4136	2774
Mean (SD)	5 (2)	6 (3)	6 (4)	6 (2)	6 (3)	6 (3)	6 (2)	6 (3)	6 (4)	5 (2)	6 (3)	6 (4)
Median (min, max)	5 (1, 27)	5 (1, 30)	5 (1, 30)	5 (1, 18)	5 (1, 30)	5 (1, 25)	5 (1, 16)	5 (1, 30)	5 (1, 28)	5 (1, 27)	5 (1, 30)	5 (1, 30)
IQR	2	2	3	2	2	3	2	2	3	2	2	3
Number of days on CCU												
N	244	1880	1235	109	663	448	103	681	439	456	3224	2122
Mean (SD)	3 (2)	3 (2)	4 (3)	3 (2)	4 (2)	3 (2)	3 (2)	3 (3)	4 (3)	3 (2)	3 (2)	3 (3)
Median (min, max)	3 (1, 17)	3 (1, 29)	3 (1, 28)	3 (1, 9)	3 (1, 21)	3 (1, 24)	3 (1, 12)	3 (1, 30)	3 (1, 20)	3 (1, 17)	3 (1, 30)	3 (1, 28)
IQR	2	2	2	2	2	2	2	2	2	2	2	2
Number of days on ICU/CICU												
N	9	59	40	2	16	18	1	16	6	12	91	64
Mean (SD)	2 (1)	3 (3)	4 (4)	3 (1)	4 (3)	3 (2)	1 (.)	3 (1)	3 (1)	2 (1)	3 (3)	4 (3)
Median (min, max)	2 (1, 4)	2 (1, 17)	3 (1, 17)	3 (2, 4)	2 (2, 14)	3 (2, 9)	1 (1, 1)	3 (1, 5)	3 (1, 4)	2 (1, 4)	2 (1, 17)	3 (1, 17)
IQR	1	3	3	2	2	2	0	2	1	2	2	3

*Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

**Total admission days is derived as Outcome date - Admission date + 1

Year	2006-2008			2009			2010			2006-2010		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	344	2555	1748	145	909	627	146	1006	650	635	4470	3025
Fibrinolytic therapy, No. (%)												
Given	259 (75)	1943 (76)	1175 (67)	119 (82)	698 (77)	441 (70)	113 (77)	764 (76)	470 (72)	491 (77)	3405 (76)	2086 (69)
Not given-proceeded directly to primary angioplasty	20 (6)	167 (7)	132 (8)	6 (4)	50 (6)	34 (5)	9 (6)	90 (9)	41 (6)	35 (6)	307 (7)	207 (7)
Not given-Contraindicated	10 (3)	84 (3)	94 (5)	3 (2)	29 (3)	50 (8)	3 (2)	23 (2)	38 (6)	16 (3)	136 (3)	182 (6)
Not given-Missed thrombolysis	40 (12)	282 (11)	265 (15)	15 (10)	102 (11)	84 (13)	19 (13)	105 (10)	78 (12)	74 (12)	489 (11)	427 (14)
Not given-Others***	15 (4)	79 (3)	82 (5)	2 (1)	30 (3)	18 (3)	2 (1)	24 (2)	23 (4)	19 (3)	133 (3)	123 (4)
Cardiac catheterisation, No. (%)												
Yes	82 (24)	538 (21)	320 (18)	44 (30)	247 (27)	134 (21)	31 (21)	221 (22)	127 (20)	157 (25)	1006 (23)	581 (19)
No	247 (72)	1939 (76)	1376 (79)	94 (65)	627 (69)	470 (75)	106 (73)	736 (73)	492 (76)	447 (70)	3302 (74)	2338 (77)
Number transferred to another centre	15 (4)	78 (3)	52 (3)	7 (5)	35 (4)	23 (4)	9 (6)	49 (5)	31 (5)	31 (5)	162 (4)	106 (4)
Percutaneous Coronary Intervention, No. (%)												
Yes	66 (19)	501 (20)	289 (17)	32 (22)	203 (22)	106 (17)	21 (14)	167 (17)	87 (13)	119 (19)	871 (19)	482 (16)
No	278 (81)	2054 (80)	1459 (83)	113 (78)	706 (78)	521 (83)	125 (86)	839 (83)	563 (87)	516 (81)	3599 (81)	2543 (84)
CABG, No. (%)												
Yes	0 (0)	13 (1)	15 (1)	0 (0)	3 (0)	1 (0)	0 (0)	4 (0)	2 (0)	0 (0)	20 (0)	18 (1)
No	344 (100)	2542 (99)	1733 (99)	145 (100)	906 (100)	626 (100)	146 (100)	1002 (100)	648 (100)	635 (100)	4450 (100)	3007 (99)

***'Not given-Others' includes missing and refusal

Year	2006-2008			2009			2010			2006-2010		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	344	2555	1748	145	909	627	146	1006	650	635	4470	3025
Pre-admission aspirin use, No. (%)												
Yes	46 (13)	464 (18)	370 (21)	25 (17)	190 (21)	168 (27)	29 (20)	196 (19)	138 (21)	100 (16)	850 (19)	676 (22)
No	269 (78)	1833 (72)	1201 (69)	110 (76)	681 (75)	427 (68)	110 (75)	754 (75)	486 (75)	489 (77)	3268 (73)	2114 (70)
Unknown	29 (8)	258 (10)	177 (10)	10 (7)	38 (4)	32 (5)	7 (5)	56 (6)	26 (4)	46 (7)	352 (8)	235 (8)
Pharmacological therapy given during admission, No. (%)												
Aspirin	322 (94)	2391 (94)	1605 (92)	141 (97)	857 (94)	580 (93)	141 (97)	953 (95)	609 (94)	604 (95)	4201 (94)	2794 (92)
ADP antagonist	226 (66)	1697 (66)	1231 (70)	113 (78)	719 (79)	477 (76)	118 (81)	794 (79)	499 (77)	457 (72)	3210 (72)	2207 (73)
GP receptor inhibitor	15 (4)	87 (3)	63 (4)	6 (4)	50 (6)	30 (5)	4 (3)	36 (4)	21 (3)	25 (4)	173 (4)	114 (4)
Unfractionated heparin	37 (11)	260 (10)	178 (10)	13 (9)	95 (10)	46 (7)	20 (14)	151 (15)	73 (11)	70 (11)	506 (11)	297 (10)
LMWH	141 (41)	864 (34)	593 (34)	59 (41)	364 (40)	291 (46)	66 (45)	427 (42)	270 (42)	266 (42)	1655 (37)	1154 (38)
Beta blocker	236 (69)	1723 (67)	998 (57)	95 (66)	572 (63)	345 (55)	89 (61)	594 (59)	338 (52)	420 (66)	2889 (65)	1681 (56)
ACE inhibitor	198 (58)	1525 (60)	913 (52)	88 (61)	466 (51)	355 (57)	73 (50)	524 (52)	323 (50)	359 (57)	2515 (56)	1591 (53)
Angiotensin II receptor blocker	17 (5)	108 (4)	96 (5)	8 (6)	66 (7)	42 (7)	14 (10)	53 (5)	47 (7)	39 (6)	227 (5)	185 (6)
Statin	306 (89)	2316 (91)	1544 (88)	129 (89)	795 (87)	544 (87)	129 (88)	910 (90)	586 (90)	564 (89)	4021 (90)	2674 (88)
Other lipid lowering agent	21 (6)	115 (5)	54 (3)	17 (12)	80 (9)	45 (7)	6 (4)	47 (5)	23 (4)	44 (7)	242 (5)	122 (4)
Diuretics	52 (15)	576 (23)	559 (32)	18 (12)	157 (17)	150 (24)	21 (14)	187 (19)	197 (30)	91 (14)	920 (21)	906 (30)
Calcium antagonist	14 (4)	132 (5)	172 (10)	7 (5)	58 (6)	44 (7)	2 (1)	52 (5)	40 (6)	23 (4)	242 (5)	256 (8)
Oral hypoglycaemic agent	60 (17)	639 (25)	354 (20)	25 (17)	200 (22)	131 (21)	24 (16)	239 (24)	116 (18)	109 (17)	1078 (24)	601 (20)
Insulin	55 (16)	650 (25)	449 (26)	17 (12)	186 (20)	146 (23)	23 (16)	239 (24)	173 (27)	95 (15)	1075 (24)	768 (25)
Anti-arrhythmic agent	17 (5)	180 (7)	162 (9)	9 (6)	31 (3)	38 (6)	10 (7)	73 (7)	66 (10)	36 (6)	284 (6)	266 (9)

Table 4.3 Treatments for patients with STEMI by gender, NCVd-ACS Registry, 2006-2010

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Gender								
Total	3943	704	1452	229	1546	256	6941	1189
Total admission days*								
N	3704	656	1385	217	1329	207	6418	1080
Mean (SD)	6 (3)	7 (4)	6 (3)	6 (3)	6 (4)	7 (4)	6 (3)	7 (4)
Median (min, max)	5 (1, 30)	6 (1, 29)	5 (1, 30)	5 (1, 25)	5 (1, 30)	6 (1, 23)	5 (1, 30)	5 (1, 29)
IQR	2	4	2	3	2	2	2	3
Number of days on CCU								
N	2888	471	1060	160	1044	179	4992	810
Mean (SD)	3 (3)	4 (3)	3 (2)	4 (3)	3 (3)	4 (3)	3 (2)	4 (3)
Median (min, max)	3 (1, 29)	3 (1, 28)	3 (1, 24)	3 (1, 24)	3 (1, 30)	3 (1, 19)	3 (1, 30)	3 (1, 28)
IQR	2	2	2	2	2	2	2	2
Number of days on ICU/CICU								
N	86	22	33	3	19	4	138	29
Mean (SD)	4 (3)	3 (2)	3 (3)	3 (1)	3 (1)	3 (1)	3 (3)	3 (2)
Median (min, max)	2 (1, 17)	2 (1, 11)	2 (2, 14)	4 (2, 4)	3 (1, 5)	3 (2, 3)	2 (1, 17)	2 (1, 11)
IQR	3	2	2	2	3	1	2	2
Fibrinolytic therapy, No. (%)								
Given	2914 (74)	463 (66)	1100 (76)	158 (69)	1180 (76)	167 (65)	5194 (75)	788 (66)
Not given-proceeded directly to primary angioplasty	274 (7)	45 (6)	76 (5)	14 (6)	114 (7)	26 (10)	464 (7)	85 (7)
Not given-Contraindicated	150 (4)	38 (5)	67 (5)	15 (7)	45 (3)	19 (7)	262 (4)	72 (6)
Not given-Missed thrombolysis	459 (12)	128 (18)	165 (11)	36 (16)	167 (11)	35 (14)	791 (11)	199 (17)
Not given-Others**	146 (4)	30 (4)	44 (3)	6 (3)	40 (3)	9 (4)	230 (3)	45 (4)

***Not given-Others' includes missing and refusal

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Gender								
Total	3943	704	1452	229	3943	704	1452	229
Cardiac catheterisation, No. (%)								
Yes	820 (21)	120 (17)	372 (26)	53 (23)	321 (21)	58 (23)	1513 (22)	231 (19)
No	2994 (76)	568 (81)	1026 (71)	165 (72)	1145 (74)	189 (74)	5165 (74)	922 (78)
Number transferred to another centre	129 (3)	16 (2)	54 (4)	11 (5)	80 (5)	9 (4)	263 (4)	36 (3)
Percutaneous Coronary Intervention, No. (%)								
Yes	749 (19)	107 (15)	298 (21)	43 (19)	231 (15)	44 (17)	1278 (18)	194 (16)
No	3194 (81)	597 (85)	1154 (79)	186 (81)	1315 (85)	212 (83)	5663 (82)	995 (84)
CABG, No. (%)								
Yes	25 (1)	3 (0)	4 (0)	0 (0)	5 (0)	1 (0)	34 (0)	4 (0)
No	3918 (99)	701 (100)	1448 (100)	229 (100)	1541 (100)	255 (100)	6907 (100)	1185 (100)
Pre-admission aspirin use, No. (%)								
Yes	726 (18)	154 (22)	324 (22)	59 (26)	303 (20)	60 (23)	1353 (19)	273 (23)
No	2835 (72)	468 (66)	1058 (73)	160 (70)	1162 (75)	188 (73)	5055 (73)	816 (69)
Unknown	382 (10)	82 (12)	70 (5)	10 (4)	81 (5)	8 (3)	533 (8)	100 (8)

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Total	3943	704	1452	229	3943	704	1452	229
Pharmacological therapy given during admission, No. (%)								
Aspirin	3676 (93)	642 (91)	1364 (94)	214 (93)	1459 (94)	244 (95)	6499 (94)	1100 (93)
ADP antagonist	2663 (68)	491 (70)	1134 (78)	175 (76)	1217 (79)	194 (76)	5014 (72)	860 (72)
GP receptor inhibitor	143 (4)	22 (3)	75 (5)	11 (5)	52 (3)	9 (4)	270 (4)	42 (4)
Unfractionated heparin	406 (10)	69 (10)	129 (9)	25 (11)	205 (13)	39 (15)	740 (11)	133 (11)
LMWH	1310 (33)	288 (41)	613 (42)	101 (44)	649 (42)	114 (45)	2572 (37)	503 (42)
Beta blocker	2533 (64)	424 (60)	885 (61)	127 (55)	875 (57)	146 (57)	4293 (62)	697 (59)
ACE inhibitor	2268 (58)	368 (52)	792 (55)	117 (51)	798 (52)	122 (48)	3858 (56)	607 (51)
Angiotensin II receptor blocker	178 (5)	43 (6)	95 (7)	21 (9)	92 (6)	22 (9)	365 (5)	86 (7)
Statin	3552 (90)	614 (87)	1271 (88)	197 (86)	1398 (90)	227 (89)	6221 (90)	1038 (87)
Other lipid lowering agent	163 (4)	27 (4)	118 (8)	24 (10)	65 (4)	11 (4)	346 (5)	62 (5)
Diuretics	944 (24)	243 (35)	257 (18)	68 (30)	321 (21)	84 (33)	1522 (22)	395 (33)
Calcium antagonist	258 (7)	60 (9)	90 (6)	19 (8)	70 (5)	24 (9)	418 (6)	103 (9)
Oral hypoglycaemic agent	843 (21)	210 (30)	290 (20)	66 (29)	318 (21)	61 (24)	1451 (21)	337 (28)
Insulin	860 (22)	294 (42)	285 (20)	64 (28)	338 (22)	97 (38)	1483 (21)	455 (38)
Anti-arrhythmic agent	295 (7)	64 (9)	65 (4)	13 (6)	118 (8)	31 (12)	478 (7)	108 (9)

*Total admission days is derived as Outcome date - Admission date + 1

** 'Not given-Others' includes missing and refusal

Note: Percentage is to the nearest decimal point

Table 4.4 Treatments for patients with STEMI by ethnic group, NCVd-ACS Registry, 2006-2010

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2515	958	874	300	932	318	331	100	1019	338	297	148	4466	1614	1502	548
Total admission days**																
N	2387	903	829	241	892	303	316	91	904	275	255	102	4183	1481	1400	434
Mean (SD)	6 (3)	6 (3)	6 (3)	6 (4)	6 (3)	5 (3)	6 (3)	6 (2)	6 (4)	6 (4)	6 (3)	6 (3)	6 (3)	6 (3)	6 (3)	6 (3)
Median (min, max)	5 (1, 30)	5 (1, 28)	5 (1, 29)	5 (1, 27)	5 (1, 30)	5 (1, 25)	5 (1, 29)	5 (2, 15)	5 (1, 30)	5 (1, 28)	5 (1, 30)	5 (1, 20)	5 (1, 30)	5 (1, 28)	5 (1, 30)	5 (1, 27)
IQR	2	2	2	2	2	2	2	2	2	3	1	2	3	2	1	2
Number of days on CCU																
N	1923	680	552	204	690	233	222	75	726	220	172	105	3339	1133	946	384
Mean (SD)	3 (3)	3 (2)	4 (3)	3 (3)	3 (2)	3 (3)	3 (2)	3 (2)	3 (3)	4 (2)	3 (2)	4 (2)	3 (3)	3 (2)	3 (3)	3 (2)
Median (min, max)	3 (1, 28)	3 (1, 17)	3 (1, 29)	3 (1, 28)	3 (1, 14)	3 (1, 24)	3 (1, 21)	3 (1, 11)	3 (1, 30)	3 (1, 14)	3 (1, 14)	3 (1, 20)	3 (1, 30)	3 (1, 24)	3 (1, 29)	3 (1, 28)
IQR	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
Number of days on ICU/CICU																
N	57	27	7	17	17	5	12	2	14	4	3	2	88	36	22	21
Mean (SD)	4 (4)	3 (3)	3 (1)	2 (1)	4 (2)	2 (0)	3 (1)	10 (6)	3 (1)	2 (1)	1 (1)	3 (0)	4 (3)	3 (3)	3 (1)	3 (3)
Median (min, max)	3 (1, 17)	2 (1, 13)	2 (1, 5)	2 (1, 4)	2 (2, 9)	2 (2, 3)	3 (2, 4)	10 (6, 14)	3 (1, 5)	3 (1, 3)	1 (1, 2)	3 (3, 3)	3 (1, 17)	2 (1, 13)	2 (1, 5)	2 (1, 14)
IQR	3	3	2	1	2	0	2	8	2	2	1	0	3	2	2	1

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2515	958	874	300	932	318	331	100	1019	338	297	148	4466	1614	1502	548
Fibrinolytic therapy, No. (%)	1906 (76)	637 (66)	623 (71)	211 (70)	726 (78)	214 (67)	246 (74)	72 (72)	773 (76)	238 (70)	215 (72)	121 (82)	3405 (76)	1089 (67)	1084 (72)	404 (74)
Given	135 (5)	88 (9)	72 (8)	24 (8)	43 (5)	21 (7)	19 (6)	7 (7)	77 (8)	32 (9)	28 (9)	3 (2)	255 (6)	141 (9)	119 (8)	34 (6)
Not given-proceeded directly to primary angioplasty	97 (4)	46 (5)	25 (3)	20 (7)	42 (5)	19 (6)	11 (3)	10 (10)	33 (3)	18 (5)	7 (2)	6 (4)	172 (4)	83 (5)	43 (3)	36 (7)
Not given-Contraindicated	289 (11)	145 (15)	122 (14)	31 (10)	97 (10)	49 (15)	46 (14)	9 (9)	112 (11)	37 (11)	39 (13)	14 (9)	498 (11)	231 (14)	207 (14)	54 (10)
Not given-Missed thrombolysis	88 (3)	42 (4)	32 (4)	14 (5)	24 (3)	15 (5)	9 (3)	2 (2)	24 (2)	13 (4)	8 (3)	4 (3)	136 (3)	70 (4)	49 (3)	20 (4)
Not given-Others***	1906 (76)	637 (66)	623 (71)	211 (70)	726 (78)	214 (67)	246 (74)	72 (72)	773 (76)	238 (70)	215 (72)	121 (82)	3405 (76)	1089 (67)	1084 (72)	404 (74)
Cardiac catheterisation, No. (%)																
Yes	437 (17)	239 (25)	196 (22)	68 (23)	194 (21)	104 (33)	104 (31)	23 (23)	216 (21)	81 (24)	72 (24)	10 (7)	847 (19)	424 (26)	372 (25)	101 (18)
No	2004 (80)	691 (72)	656 (75)	211 (70)	705 (76)	208 (65)	213 (64)	65 (65)	763 (75)	234 (69)	213 (72)	124 (84)	3472 (78)	1133 (70)	1082 (72)	400 (73)
Number transferred to another centre	74 (3)	28 (3)	22 (3)	21 (7)	33 (4)	6 (2)	14 (4)	12 (12)	40 (4)	23 (7)	12 (4)	14 (9)	147 (3)	57 (4)	48 (3)	47 (9)
Percutaneous Coronary Intervention, No. (%)																
Yes	389 (15)	217 (23)	194 (22)	56 (19)	145 (16)	93 (29)	84 (25)	19 (19)	137 (13)	68 (20)	58 (20)	12 (8)	671 (15)	378 (23)	336 (22)	87 (16)
No	2126 (85)	741 (77)	680 (78)	244 (81)	787 (84)	225 (71)	247 (75)	81 (81)	882 (87)	270 (80)	239 (80)	136 (92)	3795 (85)	1236 (77)	1166 (78)	461 (84)

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2515	958	874	300	932	318	331	100	1019	338	297	148	4466	1614	1502	548
CABG, No. (%)																
Yes	18 (1)	8 (1)	2 (0)	0 (0)	2 (0)	1 (0)	1 (0)	0 (0)	2 (0)	2 (1)	1 (0)	1 (1)	22 (0)	11 (1)	4 (0)	1 (0)
No	2497 (99)	950 (99)	872 (100)	300 (100)	930 (100)	317 (100)	330 (100)	100 (100)	1017 (100)	336 (99)	296 (100)	147 (99)	4444 (100)	1603 (99)	1498 (100)	547 (100)
Pre-admission aspirin use, No. (%)																
Yes	471 (19)	170 (18)	203 (23)	36 (12)	198 (21)	69 (22)	107 (32)	9 (9)	200 (20)	61 (18)	86 (29)	16 (11)	869 (19)	300 (19)	396 (26)	61 (11)
No	1820 (72)	691 (72)	567 (65)	225 (75)	684 (73)	237 (75)	211 (64)	86 (86)	773 (76)	263 (78)	186 (63)	128 (86)	3277 (73)	1191 (74)	964 (64)	439 (80)
Unknown	224 (9)	97 (10)	104 (12)	39 (13)	50 (5)	12 (4)	13 (4)	5 (5)	46 (5)	14 (4)	25 (8)	4 (3)	320 (7)	123 (8)	142 (9)	48 (9)
Pharmacological therapy given during admission, No. (%)																
Aspirin	2339 (93)	895 (93)	816 (93)	268 (89)	877 (94)	296 (93)	314 (95)	91 (91)	960 (94)	322 (95)	283 (95)	138 (93)	4176 (94)	1513 (94)	1413 (94)	497 (91)
ADP antagonist	1680 (67)	723 (75)	590 (68)	161 (54)	695 (75)	270 (85)	275 (83)	69 (69)	797 (78)	265 (78)	241 (81)	108 (73)	3172 (71)	1258 (78)	1106 (74)	338 (62)
GP receptor inhibitor	91 (4)	33 (3)	29 (3)	12 (4)	40 (4)	17 (5)	25 (8)	4 (4)	37 (4)	10 (3)	9 (3)	5 (3)	168 (4)	60 (4)	63 (4)	21 (4)
Unfractionated heparin	283 (11)	71 (7)	101 (12)	20 (7)	71 (8)	36 (11)	34 (10)	13 (13)	139 (14)	45 (13)	45 (15)	15 (10)	493 (11)	152 (9)	180 (12)	48 (9)
LMWH	795 (32)	327 (34)	351 (40)	125 (42)	357 (38)	136 (43)	149 (45)	72 (72)	385 (38)	147 (43)	138 (46)	93 (63)	1537 (34)	610 (38)	638 (42)	290 (53)
Beta blocker	1574 (63)	654 (68)	577 (66)	152 (51)	567 (61)	182 (57)	203 (61)	60 (60)	565 (55)	198 (59)	180 (61)	78 (53)	2706 (61)	1034 (64)	960 (64)	290 (53)

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2515	958	874	300	932	318	331	100	1019	338	297	148	4466	1614	1502	548
ACE inhibitor	1472 (59)	509 (53)	523 (60)	132 (44)	528 (57)	157 (49)	165 (50)	59 (59)	542 (53)	174 (51)	144 (48)	60 (41)	2542 (57)	840 (52)	832 (55)	251 (46)
Angiotensin II receptor blocker	107 (4)	52 (5)	45 (5)	17 (6)	62 (7)	16 (5)	33 (10)	5 (5)	59 (6)	20 (6)	29 (10)	6 (4)	228 (5)	88 (5)	107 (7)	28 (5)
Statin	2259 (90)	869 (91)	775 (89)	263 (88)	808 (87)	277 (87)	288 (87)	95 (95)	926 (91)	304 (90)	262 (88)	133 (90)	3993 (89)	1450 (90)	1325 (88)	491 (90)
Other lipid lowering agent	104 (4)	34 (4)	43 (5)	9 (3)	90 (10)	16 (5)	29 (9)	7 (7)	31 (3)	21 (6)	13 (4)	11 (7)	225 (5)	71 (4)	85 (6)	27 (5)
Diuretics	673 (27)	208 (22)	236 (27)	70 (23)	198 (21)	52 (16)	53 (16)	22 (22)	229 (22)	68 (20)	67 (23)	41 (28)	1100 (25)	328 (20)	356 (24)	133 (24)
Calcium antagonist	169 (7)	60 (6)	67 (8)	22 (7)	63 (7)	14 (4)	27 (8)	5 (5)	56 (5)	11 (3)	23 (8)	4 (3)	288 (6)	85 (5)	117 (8)	31 (6)
Oral hypoglycaemic agent	529 (21)	199 (21)	289 (33)	36 (12)	181 (19)	58 (18)	105 (32)	12 (12)	218 (21)	50 (15)	96 (32)	15 (10)	928 (21)	307 (19)	490 (33)	63 (11)
Insulin	604 (24)	205 (21)	300 (34)	45 (15)	200 (21)	49 (15)	90 (27)	10 (10)	255 (25)	63 (19)	98 (33)	19 (13)	1059 (24)	317 (20)	488 (32)	74 (14)
Anti-arrhythmic agent	181 (7)	84 (9)	63 (7)	31 (10)	42 (5)	13 (4)	11 (3)	12 (12)	80 (8)	26 (8)	29 (10)	14 (9)	303 (7)	123 (8)	103 (7)	57 (10)

*Total admission days is derived as Outcome date – Admission date + 1

**'Not given-Others' includes missing and refusal

Note: Percentage is to the nearest decimal point

Table 4.5 Door to needle and balloon time distribution for patients with STEMI by year, NCVd-ACS Registry, 2006-2010

ACS stratum	STEMI only										
	2006	2007	2008	2009	2010	2006-2010					
Door to needle time, min											
N	745	827	794	832	921	4119					
Mean (SD)	103 (143)	91 (131)	112 (195)	100 (186)	119 (217)	105 (179)					
Median (min, max)	60 (2, 1349)	53 (1, 1435)	50 (1, 1440)	45 (2, 1440)	45 (3, 1440)	50 (1, 1440)					
IQR	90	70	72	68	73	75					
Door to balloon time, min											
N	151	126	99	134	123	633					
Mean (SD)	237 (292)	215 (266)	214 (260)	265 (338)	192 (224)	226 (281)					
Median (min, max)	133 (35, 1440)	112 (25, 1410)	114 (11, 1195)	119 (24, 1391)	108 (13, 1410)	117 (11, 1440)					
IQR	135	154	139	186	134	153					

Table 4.6 Treatments for patients with NSTEMI/UA by age group (years), NACVD-ACS Registry, 2006-2010

Year	2006-2008			2009			2010			2006-2010		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	172	2238	2814	58	798	1057	66	683	850	296	3719	4721
Total admission days**												
N	163	2141	2667	58	784	1020	59	623	753	280	3548	4440
Mean (SD)	5 (2)	5 (4)	6 (4)	5 (3)	5 (3)	6 (4)	5 (4)	5 (3)	5 (4)	5 (3)	5 (3)	6 (4)
Median (min, max)	4 (2, 17)	4 (1, 30)	5 (1, 30)	4 (1, 13)	4 (1, 28)	4 (1, 30)	4 (2, 26)	4 (1, 24)	4 (1, 30)	4 (1, 26)	4 (1, 30)	5 (1, 30)
IQR	2	3	3	2	3	4	3	2	4	2	3	4
Number of days on CCU												
N	49	604	802	25	364	472	15	132	190	89	1100	1464
Mean (SD)	2 (2)	3 (3)	4 (3)	3 (3)	3 (3)	4 (4)	4 (2)	3 (2)	4 (3)	3 (2)	3 (3)	4 (3)
Median (min, max)	2 (1, 10)	3 (1, 24)	3 (1, 30)	2 (1, 12)	3 (1, 26)	3 (1, 30)	4 (1, 8)	3 (1, 10)	3 (1, 16)	2 (1, 12)	3 (1, 26)	3 (1, 30)
IQR	2	3	2	3	2	3	4	2	3	3	2	2
Number of days on ICU/CICU												
N	3	81	111	0	9	19	1	10	8	4	100	138
Mean (SD)	2 (2)	3 (2)	4 (3)	.	2 (1)	5 (6)	1 (.)	3 (1)	4 (3)	2 (2)	3 (2)	4 (4)
Median (min, max)	1 (1, 4)	3 (1, 12)	3 (1, 24)	.	2 (1, 4)	3 (1, 24)	1 (1, 1)	3 (2, 4)	3 (1, 8)	1 (1, 4)	2 (1, 12)	3 (1, 24)
IQR	3	3	2	.	1	4	0	2	4	2	2	2

Year	2006-2008			2009			2010			2006-2010			
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total		172	2238	2814	58	798	1057	66	683	850	296	3719	4721
Cardiac catheterisation, No. (%)													
Yes		34 (20)	436 (19)	449 (16)	8 (14)	145 (18)	178 (17)	8 (12)	88 (13)	128 (15)	50 (17)	669 (18)	755 (16)
No		137 (80)	1762 (79)	2307 (82)	50 (86)	638 (80)	862 (82)	53 (80)	568 (83)	690 (81)	240 (81)	2968 (80)	3859 (82)
Number transferred to another centre		1 (1)	40 (2)	58 (2)	.	15 (2)	17 (2)	5 (8)	27 (4)	32 (4)	6 (2)	82 (2)	107 (2)
Percutaneous Coronary Intervention, No. (%)													
Yes		25 (15)	280 (13)	277 (10)	5 (9)	84 (11)	89 (8)	7 (11)	50 (7)	66 (8)	37 (13)	414 (11)	432 (9)
No		147 (85)	1958 (87)	2537 (90)	53 (91)	714 (89)	968 (92)	59 (89)	633 (93)	784 (92)	259 (88)	3305 (89)	4289 (91)
CABG, No. (%)													
Yes		1 (1)	44 (2)	67 (2)	0 (0)	9 (1)	19 (2)	0 (0)	6 (1)	6 (1)	1 (0)	59 (2)	92 (2)
No		171 (99)	2194 (98)	2747 (98)	58 (100)	789 (99)	1038 (98)	66 (100)	677 (99)	844 (99)	295 (100)	3660 (98)	4629 (98)
Pre-admission aspirin use, No. (%)													
Yes		56 (33)	955 (43)	1382 (49)	18 (31)	398 (50)	580 (55)	24 (36)	314 (46)	413 (49)	98 (33)	1667 (45)	2375 (50)
No		84 (49)	976 (44)	1040 (37)	39 (67)	383 (48)	455 (43)	39 (59)	332 (49)	394 (46)	162 (55)	1691 (45)	1889 (40)
Unknown		32 (19)	307 (14)	392 (14)	1 (2)	17 (2)	22 (2)	3 (5)	37 (5)	43 (5)	36 (12)	361 (10)	457 (10)

Year	2006-2008			2009			2010			2006-2010		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	172	2238	2814	58	798	1057	66	683	850	296	3719	4721
Pharmacological therapy given during admission, No. (%)												
Aspirin	152 (88)	1992 (89)	2429 (86)	54 (93)	759 (95)	980 (93)	62 (94)	630 (92)	767 (90)	268 (91)	3381 (91)	4176 (88)
ADP antagonist	92 (53)	1258 (56)	1716 (61)	41 (71)	645 (81)	872 (82)	48 (73)	485 (71)	646 (76)	181 (61)	2388 (64)	3234 (69)
GP receptor inhibitor	5 (3)	55 (2)	68 (2)	1 (2)	11 (1)	13 (1)	2 (3)	16 (2)	25 (3)	8 (3)	82 (2)	106 (2)
Unfractionated heparin	27 (16)	339 (15)	329 (12)	4 (7)	41 (5)	71 (7)	4 (6)	56 (8)	67 (8)	35 (12)	436 (12)	467 (10)
LMWH	118 (69)	1537 (69)	1977 (70)	46 (79)	671 (84)	880 (83)	48 (73)	513 (75)	631 (74)	212 (72)	2721 (73)	3488 (74)
Beta blocker	114 (66)	1533 (68)	1815 (64)	38 (66)	536 (67)	707 (67)	34 (52)	439 (64)	510 (60)	186 (63)	2508 (67)	3032 (64)
ACE inhibitor	99 (58)	1322 (59)	1546 (55)	31 (53)	533 (67)	627 (59)	32 (48)	377 (55)	423 (50)	162 (55)	2232 (60)	2596 (55)
Angiotensin II receptor blocker	9 (5)	180 (8)	321 (11)	6 (10)	65 (8)	135 (13)	5 (8)	62 (9)	124 (15)	20 (7)	307 (8)	580 (12)
Statin	148 (86)	1980 (88)	2426 (86)	51 (88)	672 (84)	902 (85)	58 (88)	602 (88)	749 (88)	257 (87)	3254 (87)	4077 (86)
Other lipid lowering agent	13 (8)	142 (6)	166 (6)	7 (12)	54 (7)	74 (7)	5 (8)	36 (5)	58 (7)	25 (8)	232 (6)	298 (6)
Diuretics	34 (20)	597 (27)	1149 (41)	10 (17)	172 (22)	394 (37)	15 (23)	190 (28)	354 (42)	59 (20)	959 (26)	1897 (40)
Calcium antagonist	22 (13)	373 (17)	720 (26)	4 (7)	129 (16)	215 (20)	11 (17)	118 (17)	237 (28)	37 (13)	620 (17)	1172 (25)
Oral hypoglycaemic agent	35 (20)	653 (29)	856 (30)	12 (21)	284 (36)	308 (29)	10 (15)	204 (30)	250 (29)	57 (19)	1141 (31)	1414 (30)
Insulin	23 (13)	527 (24)	701 (25)	5 (9)	183 (23)	224 (21)	10 (15)	166 (24)	218 (26)	38 (13)	876 (24)	1143 (24)
Anti-arrhythmic agent	6 (3)	106 (5)	212 (8)	1 (2)	33 (4)	84 (8)	2 (3)	27 (4)	67 (8)	9 (3)	166 (4)	363 (8)

*Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

**Total admission days is derived as Outcome date - Admission date + 1

Note: Percentage is to the nearest decimal point

Table 4.7 Treatments for patients with NSTEMI/UA by gender, NCVd-ACS Registry, 2006-2010

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Gender								
Total	3533	1691	1274	639	1075	524	5882	2854
Total admission days*								
N	3375	1596	1243	619	962	473	5580	2688
Mean (SD)	6 (4)	6 (4)	5 (4)	5 (4)	5 (4)	5 (3)	6 (4)	6 (4)
Median (min, max)	4 (1, 30)	5 (1, 30)	4 (1, 30)	4 (1, 29)	4 (1, 30)	4 (1, 23)	4 (1, 30)	4 (1, 30)
IQR	2	2	3	3	3	3	3	3
Number of days on CCU								
N	1068	387	587	274	241	96	1896	757
Mean (SD)	3 (3)	4 (4)	4 (3)	4 (4)	3 (2)	4 (3)	3 (3)	4 (4)
Median (min, max)	3 (1, 24)	3 (1, 30)	3 (1, 28)	3 (1, 30)	3 (1, 16)	3 (1, 14)	3 (1, 28)	3 (1, 30)
IQR	3	3	2	3	2	3	2	3
Number of days on ICU/CICU								
N	142	53	26	2	12	7	180	62
Mean (SD)	3 (3)	4 (4)	4 (5)	2 (0)	2 (1)	4 (3)	3 (3)	4 (4)
Median (min, max)	2 (1, 24)	3 (1, 23)	3 (1, 24)	2 (2, 2)	2 (1, 4)	4 (1, 8)	2 (1, 24)	3 (1, 23)
IQR	3	3	3	0	1	5	3	3
Cardiac catheterisation, No. (%)								
Yes	679 (19)	240 (14)	260 (20)	71 (11)	164 (15)	60 (11)	1103 (19)	371 (13)
No	2790 (79)	1416 (84)	990 (78)	560 (88)	866 (81)	445 (85)	4646 (79)	2421 (85)
Number transferred to another centre	64 (2)	35 (2)	24 (2)	8 (1)	45 (4)	19 (4)	133 (2)	62 (2)

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Gender								
Total	3533	1691	1274	639	1075	524	5882	2854
Percutaneous Coronary Intervention, No. (%)								
Yes	433 (12)	149 (9)	139 (11)	39 (6)	93 (9)	30 (6)	665 (11)	218 (8)
No	3100 (88)	1542 (91)	1135 (89)	600 (94)	982 (91)	494 (94)	5217 (89)	2636 (92)
CABG, No. (%)								
Yes	87 (2)	25 (1)	25 (2)	3 (0)	10 (1)	2 (0)	122 (2)	30 (1)
No	3446 (98)	1666 (99)	1249 (98)	636 (100)	1065 (99)	522 (100)	5760 (98)	2824 (99)
Pre-admission aspirin use, No. (%)								
Yes	1651 (47)	742 (44)	673 (53)	323 (51)	528 (49)	223 (43)	2852 (48)	1288 (45)
No	1376 (39)	724 (43)	577 (45)	300 (47)	494 (46)	271 (52)	2447 (42)	1295 (45)
Unknown	506 (14)	225 (13)	24 (2)	16 (3)	53 (5)	30 (6)	583 (10)	271 (9)
Pharmacological therapy given during admission, No. (%)								
Aspirin	3131 (89)	1442 (85)	1201 (94)	592 (93)	992 (92)	467 (89)	5324 (91)	2501 (88)
ADP antagonist	2132 (60)	934 (55)	1055 (83)	503 (79)	804 (75)	375 (72)	3991 (68)	1812 (63)
GP receptor inhibitor	94 (3)	34 (2)	19 (1)	6 (1)	28 (3)	15 (3)	141 (2)	55 (2)
Unfractionated heparin	483 (14)	212 (13)	81 (6)	35 (5)	87 (8)	40 (8)	651 (11)	287 (10)
LMWH	2430 (69)	1202 (71)	1045 (82)	552 (86)	799 (74)	393 (75)	4274 (73)	2147 (75)
Beta blocker	2379 (67)	1083 (64)	864 (68)	417 (65)	670 (62)	313 (60)	3913 (67)	1813 (64)
ACE inhibitor	2072 (59)	895 (53)	810 (64)	381 (60)	572 (53)	260 (50)	3454 (59)	1536 (54)
Angiotensin II receptor blocker	307 (9)	203 (12)	136 (11)	70 (11)	116 (11)	75 (14)	559 (10)	348 (12)

Year	2006-2008		2009		2010		2006-2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Total	3533	1691	1274	639	1075	524	5882	2854
Statin	3089 (87)	1465 (87)	1081 (85)	544 (85)	953 (89)	456 (87)	5123 (87)	2465 (86)
Other lipid lowering agent	214 (6)	107 (6)	96 (8)	39 (6)	69 (6)	30 (6)	379 (6)	176 (6)
Diuretics	1120 (32)	660 (39)	355 (28)	221 (35)	359 (33)	200 (38)	1834 (31)	1081 (38)
Calcium antagonist	656 (19)	459 (27)	208 (16)	140 (22)	223 (21)	143 (27)	1087 (18)	742 (26)
Oral hypoglycaemic agent	946 (27)	598 (35)	382 (30)	222 (35)	302 (28)	162 (31)	1630 (28)	982 (34)
Insulin	751 (21)	500 (30)	240 (19)	172 (27)	253 (24)	141 (27)	1244 (21)	813 (28)
Anti-arrhythmic agent	217 (6)	107 (6)	76 (6)	42 (7)	62 (6)	34 (6)	355 (6)	183 (6)

*Total admission days is derived as Outcome date – Admission date + 1
 Note: Percentage is to the nearest decimal point

Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCVd-ACS Registry, 2006-2010

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2304	1337	1367	216	855	446	535	77	693	359	483	64	3852	2142	2385	357
Total admission days**																
N	2198	1279	1304	190	838	432	519	73	627	316	443	49	3663	2027	2266	312
Mean (SD)	6 (4)	6 (4)	5 (4)	6 (4)	6 (4)	5 (3)	5 (4)	6 (5)	5 (4)	5 (2)	5 (3)	5 (3)	6 (4)	5 (4)	5 (4)	6 (4)
Median (min, max)	5 (1, 30)	4 (1, 30)	4 (1, 30)	4 (2, 22)	4 (1, 30)	4 (1, 28)	4 (1, 24)	4 (2, 30)	4 (1, 30)	4 (1, 19)	4 (1, 24)	4 (1, 13)	4 (1, 30)	4 (1, 30)	4 (1, 30)	4 (1, 30)
IQR	2	3	2	2	3	3	3	4	4	3	3	3	3	3	3	4
Number of days on CCU																
N	728	378	234	115	369	189	248	55	188	61	73	15	1285	628	555	185
Mean (SD)	3 (3)	3 (3)	4 (3)	3 (2)	4 (4)	3 (3)	4 (3)	3 (3)	3 (2)	3 (2)	4 (3)	3 (2)	4 (3)	3 (3)	4 (3)	3 (2)
Median (min, max)	3 (1, 30)	2 (1, 24)	3 (1, 21)	2 (1, 14)	3 (1, 28)	2 (1, 21)	3 (1, 30)	3 (1, 12)	3 (1, 14)	3 (1, 10)	3 (1, 16)	3 (1, 7)	3 (1, 30)	2 (1, 24)	3 (1, 30)	3 (1, 14)
IQR	2	3	3	3	3	2	2	3	3	2	3	2	2	3	3	3
Number of days on ICU/CICU																
N	89	60	20	26	13	4	5	6	12	2	3	2	114	66	28	34
Mean (SD)	4 (4)	3 (2)	4 (3)	3 (2)	4 (6)	4 (3)	3 (2)	5 (7)	3 (2)	2 (1)	4 (4)	3 (1)	4 (4)	3 (2)	3 (3)	3 (3)
Median (min, max)	3 (1, 24)	3 (1, 11)	3 (1, 12)	2 (1, 10)	2 (1, 24)	3 (1, 7)	3 (1, 5)	2 (1, 19)	3 (1, 7)	2 (1, 3)	2 (1, 8)	3 (2, 4)	3 (1, 24)	3 (1, 11)	3 (1, 12)	2 (1, 19)
IQR	2	3	4	1	2	3	3	3	2	2	7	2	2	3	4	2

Year	2006-2008				2009				2010				2006-2010			
	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	2304	1337	1367	216	855	446	535	77	693	359	483	64	3852	2142	2385	357
Cardiac catheterisation, No. (%)																
Yes	387 (17)	221 (17)	252 (18)	59 (27)	153 (18)	60 (13)	103 (19)	15 (19)	104 (15)	36 (10)	73 (15)	11 (17)	644 (17)	317 (15)	428 (18)	85 (24)
No	1862 (81)	1091 (82)	1098 (80)	155 (72)	690 (81)	375 (84)	425 (79)	60 (78)	560 (81)	306 (85)	396 (82)	49 (77)	3112 (81)	1772 (83)	1919 (80)	264 (74)
Number transferred to another centre	55 (2)	25 (2)	17 (1)	2 (1)	12 (1)	11 (2)	7 (1)	2 (3)	29 (4)	17 (5)	14 (3)	4 (6)	96 (2)	53 (2)	38 (2)	8 (2)
Percutaneous Coronary Intervention, No. (%)																
Yes	240 (10)	142 (11)	166 (12)	34 (16)	73 (9)	33 (7)	65 (12)	7 (9)	50 (7)	16 (4)	49 (10)	8 (13)	363 (9)	191 (9)	280 (12)	49 (14)
No	2064 (90)	1195 (89)	1201 (88)	182 (84)	782 (91)	413 (93)	470 (88)	70 (91)	643 (93)	343 (96)	434 (90)	56 (88)	3489 (91)	1951 (91)	2105 (88)	308 (86)
CABG, No. (%)																
Yes	58 (3)	30 (2)	15 (1)	9 (4)	17 (2)	3 (1)	3 (1)	5 (6)	8 (1)	2 (1)	2 (0)	0 (0)	83 (2)	35 (2)	20 (1)	14 (4)
No	2246 (97)	1307 (98)	1352 (99)	207 (96)	838 (98)	443 (99)	532 (99)	72 (94)	685 (99)	357 (99)	481 (100)	64 (100)	3769 (98)	2107 (98)	2365 (99)	343 (96)
Pre-admission aspirin use, No. (%)																
Yes	1068 (46)	568 (42)	688 (50)	69 (32)	460 (54)	224 (50)	283 (53)	29 (38)	324 (47)	155 (43)	244 (51)	28 (44)	1852 (48)	947 (44)	1215 (51)	126 (35)
No	954 (41)	584 (44)	442 (32)	120 (56)	377 (44)	213 (48)	244 (46)	43 (56)	335 (48)	189 (53)	213 (44)	28 (44)	1666 (43)	986 (46)	899 (38)	191 (54)
Unknown	282 (12)	185 (14)	237 (17)	27 (13)	18 (2)	9 (2)	8 (1)	5 (6)	34 (5)	15 (4)	26 (5)	8 (13)	334 (9)	209 (10)	271 (11)	40 (11)

Year	2006-2008					2009					2010					2006-2010				
	Malay	Chinese	Indian	Others*		Malay	Chinese	Indian	Others*		Malay	Chinese	Indian	Others*		Malay	Chinese	Indian	Others*	
Total	2304	1337	1367	216		855	446	535	77		693	359	483	64		3852	2142	2385	357	
Pharmacological therapy given during admission, No. (%)																				
Aspirin	2026 (88)	1177 (88)	1175 (86)	195 (90)		803 (94)	411 (92)	511 (96)	68 (88)		641 (92)	324 (90)	438 (91)	56 (88)		3470 (90)	1912 (89)	2124 (89)	319 (89)	
ADP antagonist	1258 (55)	859 (64)	814 (60)	135 (63)		651 (76)	384 (86)	463 (87)	60 (78)		499 (72)	277 (77)	364 (75)	39 (61)		2408 (63)	1520 (71)	1641 (69)	234 (66)	
GP receptor inhibitor	48 (2)	40 (3)	34 (2)	6 (3)		9 (1)	10 (2)	5 (1)	1 (1)		20 (3)	9 (3)	13 (3)	1 (2)		77 (2)	59 (3)	52 (2)	8 (2)	
Unfractionated heparin	472 (20)	82 (6)	129 (9)	12 (6)		66 (8)	25 (6)	16 (3)	9 (12)		65 (9)	20 (6)	34 (7)	8 (8)		603 (16)	127 (6)	179 (8)	29 (8)	
LMWH	1436 (62)	1022 (76)	1018 (74)	156 (72)		678 (79)	392 (88)	469 (88)	58 (75)		489 (71)	285 (79)	373 (77)	45 (70)		2603 (68)	1699 (79)	1860 (78)	259 (73)	
Beta blocker	1484 (64)	934 (70)	900 (66)	144 (67)		586 (69)	288 (65)	353 (66)	54 (70)		425 (61)	216 (60)	307 (64)	35 (55)		2495 (65)	1438 (67)	1560 (65)	233 (65)	
ACE inhibitor	1356 (59)	729 (55)	777 (57)	105 (49)		542 (63)	284 (64)	329 (61)	36 (47)		363 (52)	170 (47)	271 (56)	28 (44)		2261 (59)	1183 (55)	1377 (58)	169 (47)	
Angiotensin II receptor blocker	197 (9)	139 (10)	152 (11)	22 (10)		95 (11)	34 (8)	65 (12)	12 (16)		79 (11)	42 (12)	62 (13)	8 (13)		371 (10)	215 (10)	279 (12)	42 (12)	
Statin	1995 (87)	1181 (88)	1186 (87)	192 (89)		730 (85)	377 (85)	451 (84)	67 (87)		619 (89)	310 (86)	428 (89)	52 (81)		3344 (87)	1868 (87)	2065 (87)	311 (87)	
Other lipid lowering agent	148 (6)	85 (6)	79 (6)	9 (4)		56 (7)	29 (7)	43 (8)	7 (9)		43 (6)	21 (6)	27 (6)	8 (13)		247 (6)	135 (6)	149 (6)	24 (7)	
Diuretics	825 (36)	437 (33)	450 (33)	68 (31)		281 (33)	114 (26)	151 (28)	30 (39)		267 (39)	116 (32)	163 (34)	13 (20)		1373 (36)	667 (31)	764 (32)	111 (31)	
Calcium antagonist	487 (21)	266 (20)	321 (23)	41 (19)		161 (19)	80 (18)	90 (17)	17 (22)		146 (21)	80 (22)	130 (27)	10 (16)		794 (21)	426 (20)	541 (23)	68 (19)	
Oral hypoglycaemic agent	594 (26)	354 (26)	550 (40)	46 (21)		257 (30)	124 (28)	202 (38)	21 (27)		188 (27)	78 (22)	185 (38)	13 (20)		1039 (27)	556 (26)	937 (39)	80 (22)	
Insulin	500 (22)	273 (20)	441 (32)	37 (17)		196 (23)	65 (15)	142 (27)	9 (12)		153 (22)	70 (19)	161 (33)	10 (16)		849 (22)	408 (19)	744 (31)	56 (16)	
Anti-arrhythmic agent	144 (6)	89 (7)	69 (5)	22 (10)		59 (7)	29 (7)	19 (4)	11 (14)		49 (7)	24 (7)	21 (4)	2 (3)		252 (7)	142 (7)	109 (5)	35 (10)	

Table 4.9 Treatments for patients with ACS by type of participating centres, NCVd-ACS Registry, 2006-2010

	2006						2007						2008					
	STEMI centre		NSTEMI centre		UA centre		STEMI centre		NSTEMI centre		UA centre		STEMI centre		NSTEMI centre		UA centre	
	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician	Cardiologist	Physician
N	896	531	827	325	602	211	868	819	413	616	274	792	741	472	217	431	186	
Fibrinolytic therapy, No. (%)																		
Given	614 (69)	391 (74)					573 (66)	657 (80)										
Not given – proceeded directly to primary angioplasty	109 (12)	7 (1)					109 (13)	4 (0)										
Not given – Contraindicated	35 (4)	34 (6)					31 (4)	32 (4)										
Not given – Missed thrombolysis	109 (12)	83 (16)					132 (15)	95 (12)										
Not given – Others*	29 (3)	16 (3)					23 (3)	31 (4)										
Percutaneous Coronary Intervention, No. (%)																		
Yes	303 (34)	0 (0)	162 (20)	0 (0)	73 (12)	0 (0)	296 (34)	0 (0)	164 (25)	73 (12)	0 (0)	257 (32)	0 (0)	89 (19)	0 (0)	21 (5)	0 (0)	
No	593 (66)	531 (100)	665 (80)	325 (100)	529 (88)	211 (100)	572 (66)	819 (100)	486 (75)	543 (88)	274 (100)	535 (68)	741 (100)	383 (81)	217 (100)	410 (95)	186 (100)	
CABG, No. (%)																		
Yes	10 (1)	0 (0)	42 (5)	0 (0)	15 (2)	0 (0)	10 (1)	0 (0)	28 (4)	9 (1)	0 (0)	8 (1)	0 (0)	13 (3)	0 (0)	5 (1)	0 (0)	
No	886 (99)	531 (100)	785 (95)	325 (100)	587 (98)	211 (100)	858 (99)	819 (100)	622 (96)	607 (99)	274 (100)	784 (99)	741 (100)	459 (97)	217 (100)	426 (99)	186 (100)	

	2009						2010						2006-2010					
	STEMI		NSTEMI		UA		STEMI		NSTEMI		UA		STEMI		NSTEMI		UA	
	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre
N	1151	530	899	147	802	65	1054	748	738	270	451	140	4761	3369	3586	1372	2902	876
Fibrinolytic therapy, No. (%)																		
Given	800 (70)	458 (86)					689 (65)	658 (88)					3189 (67)	2793 (83)				
Not given – proceeded directly to primary angioplasty	88 (8)	2 (0)					140 (13)	0 (0)					533 (11)	16 (0)				
Not given – Contraindicated	60 (5)	22 (4)					46 (4)	18 (2)					198 (4)	136 (4)				
Not given – Missed thrombolysis	168 (15)	33 (6)					145 (14)	57 (8)					661 (14)	329 (10)				
Not given – Others*	35 (3)	15 (3)					34 (3)	15 (2)					180 (4)	95 (3)				
Percutaneous Coronary Intervention, No. (%)																		
Yes	341 (30)	0 (0)	142 (16)	0 (0)	35 (4)	0 (0)	273 (26)	0 (0)	100 (14)	0 (0)	22 (5)	0 (0)	1470 (31)	0 (0)	657 (18)	0 (0)	224 (8)	0 (0)
No	810 (70)	530 (100)	757 (84)	147 (100)	767 (96)	65 (100)	781 (74)	748 (100)	638 (86)	270 (100)	429 (95)	140 (100)	3291 (69)	3369 (100)	2929 (82)	1372 (100)	2678 (92)	876 (100)
CABG, No. (%)																		
Yes	4 (0)	0 (0)	19 (2)	0 (0)	9 (1)	0 (0)	5 (0)	0 (0)	6 (1)	0 (0)	4 (1)	0 (0)	37 (1)	0 (0)	108 (3)	2 (0)	42 (1)	0 (0)
No	1147 (100)	530 (100)	880 (98)	147 (100)	793 (99)	65 (100)	1049 (100)	748 (100)	732 (99)	270 (100)	447 (99)	140 (100)	4724 (99)	3369 (100)	3478 (97)	1370 (100)	2860 (99)	876 (100)