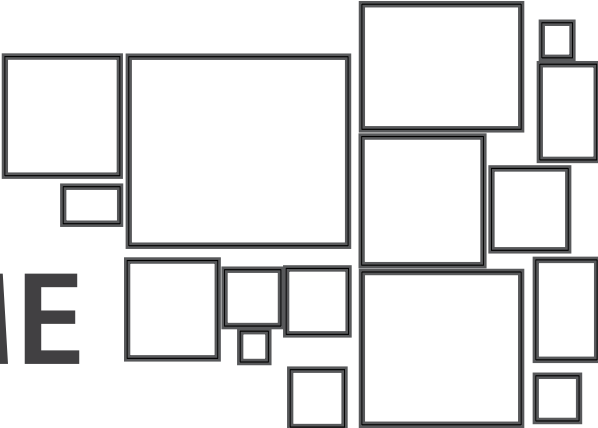


OUTCOME





OUTCOME

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Summary

1. Overall in-hospital mortality in the period of 1st Jan 2015–31st Dec 2016 was low (2.0%): at 30 days (2.8%); at 6 months (4.7%); and at 1 year (6.8%). Mortality increased at 6 months and 1 year during 2015–2016 compared to the previous cohort (2013–2014).
2. Incidences of peri-procedural complications were low (0–0.5%).
3. The in-hospital and 30-day mortality prognostic factors were being elderly (>60 years old), ACS as presentation, status of PCI (urgent > electives), clinical presentation (Killip III/IV and low ejection fraction), previous history of MI, and patient with multi-vessel disease.

There was an increase in the trend of mortality at 6 months (4.7% vs 3.2%) and 1 year (6.8% vs 3.5%) for 2015–2016 compared to the 2013–2014 cohort. This observation was seen mainly in the elderly age group (>60 years old), [Table 5.3] female gender, [Table 5.4] and those with pre-morbid condition of diabetes mellitus, [Table 5.5] hypertension [Table 5.6] and dyslipidaemia. [Table 5.7] However, the mortality trends between these two cohorts were similar for in-hospital stay and after discharge. [Table 5.2]

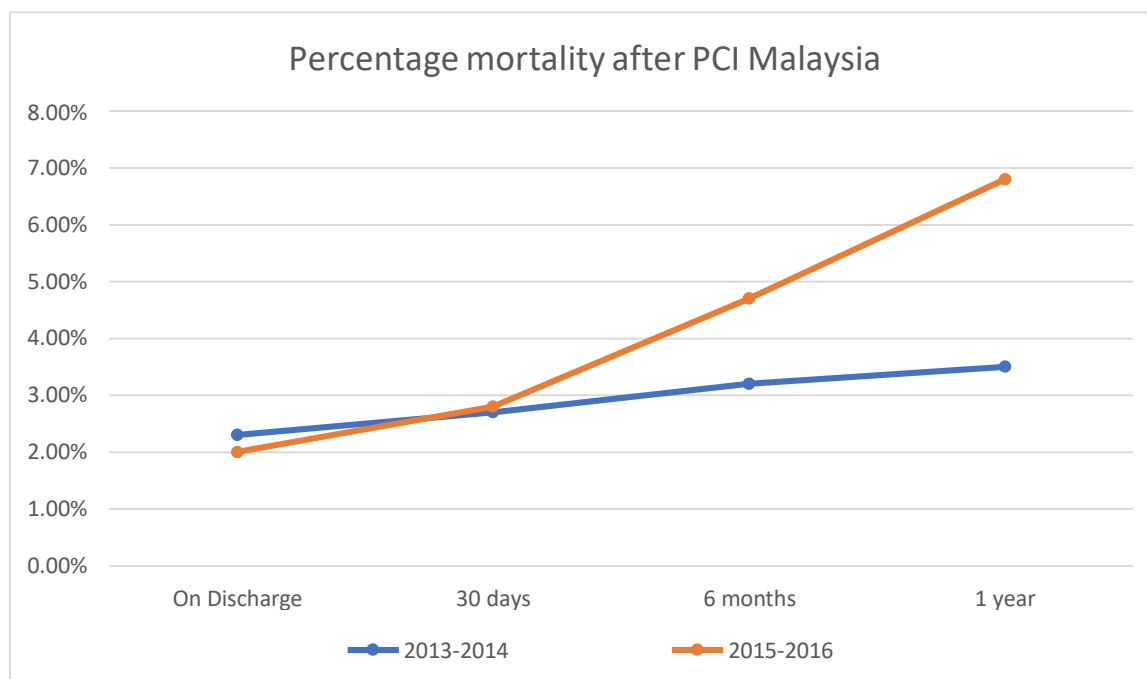


Figure 1: Comparison of mortality after PCI (in percentage) between two cohorts (2013–2014 and 2015–2016)

Most of the in-hospital mortality (89.2%) was cardiac-related deaths. [Table 5.11] 13.2% of deaths occurred in the catheterisation laboratory and the remaining 86.8% of deaths occurred out of catheterisation laboratory. [Table 5.12] A similar trend was observed in the previous cohort (2013–2014).

In the ACS group, mortality was higher in STEMI followed by NSTEMI and UA. In comparison to the previous cohort (2013–2014), the present cohort had lower mortality rates (STEMI: 5.7% vs 8.1%; NSTEMI: 2.3% vs 3.4%; UA: 0.6% vs 1.2%). [Table 5.9]



The incidences of post-procedural complications were low (0–0.5%): peri-procedural MI (0.4%), cardiogenic shock (0.5%), stroke (0.0%), arrhythmia (0.5%), and new renal impairment (0.4%). With increasing number of procedures via radial approach, bleeding complications and pseudoaneurysm appeared to reduce by 50%. Emergency re-intervention decreased from 0.8% to 0.3%. Bail out coronary artery bypass graft (CABG) was extremely low, with five patients in total. [Table 5.1]

For elective PCI, compared to the previous cohort (2013–2014), in-hospital mortality and mortality was similar (0.4% vs 0.5%), and 30-day mortality was 1.1% vs 0.8%; however, 6-month and 1-year mortality appeared to be higher (2.7% vs 1.3%); and (4.7% vs 1.6%) respectively.

Non-elective PCI had higher mortality compared to elective PCI (5.2% vs 0.4% in hospital; 6.6% vs 1.1% at 30 days; 9.1% vs 2.7% at 6 months and 11.2% vs 4.7% at 1 year). Compared to the previous cohort, the in-hospital and 30-day mortality was lower for both elective and non-elective PCI, however at 6 months and 1 year, the mortality was higher.

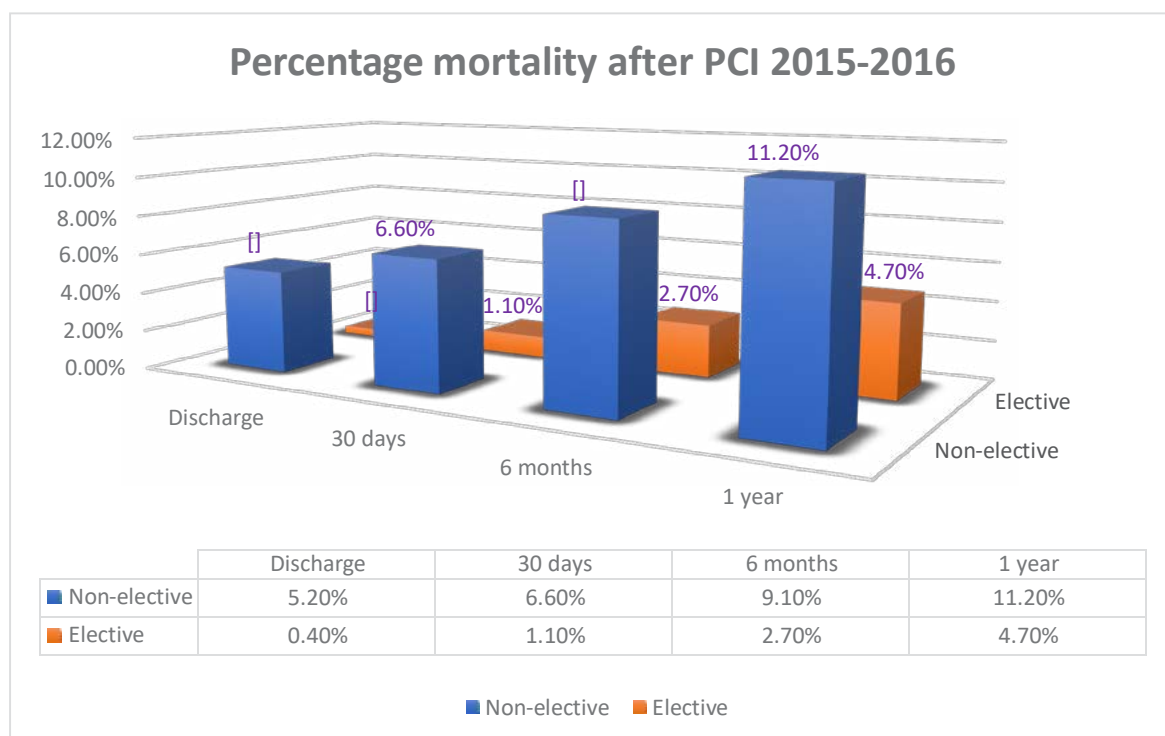


Figure 2: Comparison of mortality between elective PCI and non-elective PCI (in percentage) 2015–2016

More than 80% of patients were given aspirin or clopidogrel at discharge similar to the previous cohort. The number of patients prescribed with ticagrelor, statin, beta blocker and angiotensin converting enzyme (ACE) inhibitor increased compared to the previous cohort (2013–2014). DAPT use at 6 months and 1 year were reduced compared to the previous cohort.

**Table 5.1 Summary of in-hospital outcome for patients who underwent PCI, NCVD-PCI Registry, 2013–2016**

Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of procedures	15,514	10,397	11,141	21,538
Periprocedural MI, No. (%) (based on clinical diagnosis) /Significant periprocedural MI, No. (%)				
Yes	105 (0.7)	48 (0.5)	34 (0.3)	82 (0.4)
No	15,230 (98.9)	10,269 (99.2)	11,016 (99.4)	21,285 (99.3)
Not available	68 (0.4)	34 (0.3)	38 (0.3)	72 (0.3)
Missing	111	46	53	99
Emergency reintervention/PCI, No. (%)				
Yes	116 (0.8)	41 (0.4)	22 (0.2)	63 (0.3)
No	15,287 (99.2)	10,309 (99.6)	11,069 (99.8)	21,378 (99.7)
Missing	111	47	50	97
Bail-out CABG, No. (%)				
Yes	3 (0.0)	2 (0.0)	3 (0.0)	5 (0.0)
No	15,386 (100.0)	10,347 (100.0)	11,087 (100.0)	21,434 (100.0)
Missing	125	48	51	99
Other complications				
Cardiogenic shock (after procedure), No. (%)				
Yes	93 (0.6)	53 (0.5)	50 (0.5)	103 (0.5)
No	15,309 (99.4)	10,299 (99.5)	11,041 (99.5)	21,340 (99.5)
Missing	112	45	50	95
Arrhythmia (VT/VF/Brady), No. (%)				
Yes	119 (0.8)	62 (0.6)	46 (0.4)	108 (0.5)
No	15,283 (99.2)	10,288 (99.4)	11,045 (99.6)	21,333 (99.5)
Missing	112	47	50	97
TIA/Stroke, No. (%)				
Yes	8 (0.1)	5 (0.0)	1 (0.0)	6 (0.0)
No	15,399 (99.9)	10,347 (100.0)	11,088 (100.0)	21,435 (100.0)
Missing	107	45	52	97
Tamponade, No. (%)				
Yes	2 (0.0)	1 (0.0)	4 (0.0)	5 (0.0)
No	15,397 (100.0)	10,348 (100.0)	11,085 (100.0)	21,433 (100.0)
Missing	115	48	52	100
Contrast reaction, No. (%)				
Yes	11 (0.1)	5 (0.0)	5 (0.0)	10 (0.0)
No	15,390 (99.9)	10,342 (100.0)	11,084 (100.0)	21,426 (100.0)
Missing	113	50	52	102
New onset/worsened heart failure, No. (%)				
Yes	25 (0.2)	10 (0.1)	12 (0.1)	22 (0.1)
No	15,376 (99.8)	10,340 (99.9)	11,078 (99.9)	21,418 (99.9)
Missing	113	47	51	98



Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of procedures	15,514	10,397	11,141	21,538
New renal impairment, No. (%)				
Yes	81 (0.5)	51 (0.5)	30 (0.3)	81 (0.4)
No	15,311 (99.4)	10,278 (99.3)	11,029 (99.5)	21,307 (99.4)
Not available	12 (0.1)	21 (0.2)	30 (0.3)	51 (0.2)
Missing	110	47	52	99
Vascular complications				
Bleeding, No. (%)				
Yes	28 (0.2)	20 (0.2)	8 (0.1)	28 (0.1)
No	15,373 (99.8)	10,327 (99.8)	11,082 (99.9)	21,409 (99.9)
Missing	113	50	51	101
Type of bleeding, No. (%)				
Total no. of procedures who had bleeding	N = 28	N = 20	N = 8	N = 28
Major	2 (8.0)	1 (6.3)	1 (14.3)	2 (8.7)
Minor	4 (16.0)	5 (31.3)	2 (28.6)	7 (30.4)
Minimal	19 (76.0)	10 (62.5)	4 (57.1)	14 (60.9)
Not available	2	2	0	2
Missing	1	2	1	3
Bleeding site, No. (%)				
Total no. of procedures who had bleeding	N = 28	N = 20	N = 8	N = 28
Retroperitoneal	2 (10.0)	1 (12.5)	0 (0.0)	1 (6.7)
Percutaneous entry site	15 (75.0)	2 (25.0)	3 (42.9)	5 (33.3)
Others	3 (15.0)	5 (62.5)	4 (57.1)	9 (60.0)
Not available	7	8	1	9
Missing	1	4	0	4
Access site occlusion, No. (%)				
Yes	1 (0.0)	8 (0.1)	4 (0.0)	12 (0.1)
No	15,394 (100.0)	10,345 (99.9)	11,088 (100.0)	21,433 (99.9)
Missing	119	44	49	93
Loss of radial pulse, No. (%)				
Yes	1 (0.0)	2 (0.0)	1 (0.0)	3 (0.0)
No	15,399 (100.0)	10,352 (100.0)	11,089 (100.0)	21,441 (100.0)
Missing	114	43	51	94
Dissection, No. (%)				
Yes	7 (0.0)	8 (0.1)	17 (0.2)	25 (0.1)
No	15,391 (100.0)	10,345 (99.9)	11,074 (99.8)	21,419 (99.9)
Missing	116	44	50	94
Pseudoaneurysm, No. (%)				
Yes	12 (0.1)	5 (0.0)	4 (0.0)	9 (0.0)
No	15,379 (99.9)	10,342 (100.0)	11,088 (100.0)	21,430 (100.0)
Missing	123	50	49	99



Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of procedures	15,514	10,397	11,141	21,538
Management of pseudoaneurysm, No. (%)				
Total no. of procedures who had pseudoaneurysm	N = 12	N = 5	N = 4	N = 9
Ultrasound compression	4 (50.0)	2 (50.0)	0 (0.0)	2 (28.6)
Surgery	1 (12.5)	2 (50.0)	0 (0.0)	2 (28.6)
Others	3 (37.5)	0 (0.0)	3 (100.0)	3 (42.9)
Not available	3	1	1	2
Missing	1	0	0	0
Perforation, No. (%)				
Yes	1 (0.0)	3 (0.0)	5 (0.0)	8 (0.0)
No	13,813 (100.0)	10,133 (100.0)	11,047 (100.0)	21,180 (100.0)
Missing	1,700	261	89	350

Table 5.2 Overall outcome of patients who underwent PCI, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Discharge	**30-day	***6-month	****1-year
		No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	320 (2.3)	382 (2.7)	449 (3.2)	500 (3.5)
	Alive	13,816 (97.7)	13,754 (97.3)	13,687 (96.8)	13,636 (96.5)
	Missing	0	0	0	0
	Total	14,136	14,136	14,136	14,136
2015	Death	199 (2.1)	273 (2.9)	454 (4.9)	634 (6.8)
	Alive	9,228 (97.9)	9,069 (97.1)	8,888 (95.1)	8,708 (93.2)
	Missing [#]	1	86	86	86
	Total	9,428	9,428	9,428	9,428
2016	Death	184 (1.8)	276 (2.8)	456 (4.6)	672 (6.7)
	Alive	9,882 (98.2)	9,702 (97.2)	9,522 (95.4)	9,306 (93.3)
	Missing [#]	0	88	88	88
	Total	10,066	10,066	10,066	10,066
2015-2016	Death	383 (2.0)	549 (2.8)	910 (4.7)	1,306 (6.8)
	Alive	19,110 (98.0)	18,771 (97.2)	18,410 (95.3)	18,014 (93.2)
	Missing [#]	1	174	174	174
	Total	19,494	19,494	19,494	19,494

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

[#]For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.



Table 5.3 Overall outcome for patients who underwent PCI, by age group (years), NCD-PCI Registry, 2013–2016

Year	*Outcome	Discharge			**30-day			***6-month			****1-year		
		Young	Middle-aged	Elderly	Young	Middle-aged	Elderly	Young	Middle-aged	Elderly	Young	Middle-aged	Elderly
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
2013-3014	Death	9 (1.2)	126 (1.7)	185 (3.2)	11 (1.5)	148 (2.0)	223 (3.8)	12 (1.6)	169 (2.2)	268 (4.6)	16 (2.2)	189 (2.5)	295 (5.0)
	Alive	720 (98.8)	7,438 (98.3)	5,658 (96.8)	718 (98.5)	7,416 (98.0)	5,620 (96.2)	717 (98.4)	7,395 (97.8)	5,575 (95.4)	713 (97.8)	7,375 (97.5)	5,548 (95.0)
	Missing [#]	0	0	0	0	0	0	0	0	0	0	0	0
	Total	729	7,564	5,843	729	7,564	5,843	729	7,564	5,843	729	7,564	5,843
2015	Death	7 (1.4)	78 (1.6)	114 (2.9)	10 (2.0)	105 (2.1)	158 (4.0)	16 (3.2)	178 (3.6)	260 (6.6)	23 (4.6)	248 (5.0)	363 (9.3)
	Alive	502 (98.6)	4,901 (98.4)	3,825 (97.1)	493 (98.0)	4,823 (97.9)	3,753 (96.0)	487 (96.8)	4,750 (96.4)	3,651 (93.4)	480 (95.4)	4,680 (95.0)	3,548 (90.7)
	Missing [#]	0	0	1	6	51	29	6	51	29	6	51	29
	Total	509	4,979	3,940	509	4,979	3,940	509	4,979	3,940	509	4,979	3,940
2016	Death	6 (1.1)	58 (1.1)	120 (2.9)	8 (1.4)	101 (1.9)	167 (4.0)	14 (2.5)	154 (2.9)	288 (6.9)	24 (4.3)	229 (4.3)	419 (10.1)
	Alive	556 (98.9)	5,274 (98.9)	4,052 (97.1)	550 (98.6)	5,167 (98.1)	3,985 (96.0)	544 (97.5)	5,114 (97.1)	3,864 (93.1)	534 (95.7)	5,039 (95.7)	3,733 (89.9)
	Missing [#]	0	0	0	4	64	20	4	64	20	4	64	20
	Total	562	5,332	4,172	562	5,332	4,172	562	5,332	4,172	562	5,332	4,172
2015-2016	Death	13 (1.2)	136 (1.3)	234 (2.9)	18 (1.7)	206 (2.0)	325 (4.0)	30 (2.8)	332 (3.3)	548 (6.8)	47 (4.4)	477 (4.7)	782 (9.7)
	Alive	1,058 (98.8)	10,175 (98.7)	7,877 (97.1)	1,043 (98.3)	9,990 (98.0)	7,738 (96.0)	1,031 (97.2)	9,864 (96.7)	7,515 (93.2)	1,014 (95.6)	9,719 (95.3)	7,281 (90.3)
	Missing [#]	0	0	1	10	115	49	10	115	49	10	115	49
	Total	1,071	10,311	8,112	1,071	10,311	8,112	1,071	10,311	8,112	1,071	10,311	8,112

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital, at 30 days, and six months.

****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patient.

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



Table 5.4 Overall outcome for patients who underwent PCI, by gender, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Discharge		**30-day		***6-month		****1-year	
		Male No. (%)	Female No. (%)	Male No. (%)	Female No. (%)	Male No. (%)	Female No. (%)	Male No. (%)	Female No. (%)
2013-2014	Death	249 (2.1)	71 (3.1)	302 (2.6)	80 (3.5)	355 (3.0)	94 (4.1)	398 (3.4)	102 (4.4)
	Alive	11,569 (97.9)	2,247 (96.9)	11,516 (97.4)	2,238 (96.5)	11,463 (97.0)	2,224 (95.9)	11,420 (96.6)	2,216 (95.6)
	Missing#	0	0	0	0	0	0	0	0
	Total	11,818	2,318	11,818	2,318	11,818	2,318	11,818	2,318
2015	Death	164 (2.1)	35 (2.2)	223 (2.9)	50 (3.2)	355 (4.6)	99 (6.2)	486 (6.3)	148 (9.3)
	Alive	7,664 (97.9)	1,564 (97.8)	7,533 (97.1)	1,536 (96.8)	7,401 (95.4)	1,487 (93.8)	7,270 (93.7)	1,438 (90.7)
	Missing#	0	1	72	14	72	14	72	14
	Total	7,828	1,600	7,828	1,600	7,828	1,600	7,828	1,600
2016	Death	144 (1.7)	40 (2.4)	209 (2.5)	67 (4.1)	336 (4.0)	120 (7.3)	516 (6.2)	156 (9.4)
	Alive	8,258 (98.3)	1,624 (97.6)	8,118 (97.5)	1,584 (95.9)	7,991 (96.0)	1,531 (92.7)	7,811 (93.8)	1,495 (90.6)
	Missing#	0	0	75	13	75	13	75	13
	Total	8,402	1,664	8,402	1,664	8,402	1,664	8,402	1,664
2015-2016	Death	308 (1.9)	75 (2.3)	432 (2.7)	117 (3.6)	691 (4.3)	219 (6.8)	1,002 (6.2)	304 (9.4)
	Alive	15,922 (98.1)	3,188 (97.7)	15,651 (97.3)	3,120 (96.4)	15,392 (95.7)	3,018 (93.2)	15,081 (93.8)	2,933 (90.6)
	Missing#	0	1	147	27	147	27	147	27
	Total	16,230	3,264	16,230	3,264	16,230	3,264	16,230	3,264

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

*****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.

Table 5.5 Overall outcome for patients who underwent PCI, by pre-morbid diabetes, NCVd-PCI Registry, 2013–2016

Year	*Outcome	Discharge			**30-day			***6-month			****1-year		
		Diabetic	Non-diabetic	Not known	Diabetic	Non-diabetic	Not known	Diabetic	Non-diabetic	Not known	Diabetic	Non-diabetic	Not known
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	152 (2.5)	111 (1.6)	57 (6.1)	181 (2.9)	140 (2.0)	61 (6.5)	216 (3.5)	169 (2.4)	64 (6.8)	243 (3.9)	192 (2.7)	65 (6.9)
	Alive	6,006 (97.5)	6,927 (98.4)	883 (93.9)	5,977 (97.1)	6,898 (98.0)	879 (93.5)	5,942 (96.5)	6,869 (97.6)	876 (93.2)	5,915 (96.1)	6,846 (97.3)	875 (93.1)
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
	Total	6,158	7,038	940	6,158	7,038	940	6,158	7,038	940	6,158	7,038	940
2015	Death	105 (2.5)	70 (1.5)	24 (5.4)	152 (3.6)	94 (2.0)	27 (6.2)	266 (6.3)	155 (3.3)	33 (7.5)	383 (9.0)	212 (4.5)	39 (8.9)
	Alive	4,161 (97.5)	4,648 (98.5)	419 (94.6)	4,086 (96.4)	4,572 (98.0)	411 (93.8)	3,972 (93.7)	4,511 (96.7)	405 (92.5)	3,855 (91.0)	4,454 (95.5)	399 (91.1)
	Missing [#]	1	0	0	29	52	5	29	52	5	29	52	5
	Total	4,267	4,718	443	4,267	4,718	443	4,267	4,718	443	4,267	4,718	443
2016	Death	84 (1.8)	73 (1.5)	27 (5.2)	148 (3.3)	98 (2.0)	30 (5.8)	260 (5.8)	156 (3.1)	40 (7.8)	396 (8.8)	227 (4.6)	49 (9.5)
	Alive	4,458 (98.2)	4,934 (98.5)	490 (94.8)	4,358 (96.7)	4,859 (98.0)	485 (94.2)	4,246 (94.2)	4,801 (96.9)	475 (92.2)	4,110 (91.2)	4,730 (95.4)	466 (90.5)
	Missing [#]	0	0	0	36	50	2	36	50	2	36	50	2
	Total	4,542	5,007	517	4,542	5,007	517	4,542	5,007	517	4,542	5,007	517
2015-2016	Death	189 (2.1)	143 (1.5)	51 (5.3)	300 (3.4)	192 (2.0)	57 (6.0)	526 (6.0)	311 (3.2)	73 (7.7)	779 (8.9)	439 (4.6)	88 (9.2)
	Alive	8,619 (97.9)	9,582 (98.5)		8,444 (96.6)	9,431 (98.0)		8,218 (94.0)	9,312 (96.8)		7,965 (91.1)	9,184 (95.4)	
	Missing [#]	1	0	0	65	102	7	65	102	7	65	102	7
	Total	8,809	9,725	960	8,809	9,725	960	8,809	9,725	960	8,809	9,725	960

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.





Table 5.6 Overall outcome of patients who underwent PCI, by pre-morbid hypertension, NCD-PCI Registry, 2013-2016

Year	*Outcome	Discharge			**30-day			***6-month			****1-year		
		Hypertensive No. (%)	Non- hypertensive No. (%)	Not known No. (%)	Hypertensive No. (%)	Non- hypertensive No. (%)	Not known No. (%)	Hypertensive No. (%)	Non- hypertensive No. (%)	Not known No. (%)	Hypertensive No. (%)	Non- hypertensive No. (%)	Not known No. (%)
2013-2014	Death	194 (2.0)	67 (1.7)	59 (7.4)	241 (2.5)	80 (2.1)	61 (7.6)	294 (3.1)	92 (2.4)	63 (7.9)	332 (3.5)	104 (2.7)	64 (8.0)
	Alive	9,285 (98.0)	3,790 (98.3)	741 (92.6)	9,238 (97.5)	3,777 (97.9)	739 (92.4)	9,185 (96.9)	3,765 (97.6)	737 (92.1)	9,147 (96.5)	3,753 (97.3)	736 (92.0)
	Missing#	0	0	0	0	0	0	0	0	0	0	0	0
	Total	9,479	3,857	800	9,479	3,857	800	9,479	3,857	800	9,479	3,857	800
2015	Death	126 (2.0)	52 (2.0)	21 (5.4)	173 (2.7)	75 (2.9)	25 (6.5)	310 (4.9)	114 (4.4)	30 (7.8)	451 (7.1)	148 (5.7)	35 (9.1)
	Alive	6,265 (98.0)	2,595 (98.0)	368 (94.6)	6,170 (97.3)	2,541 (97.1)	358 (93.5)	6,033 (95.1)	2,502 (95.6)	353 (92.2)	5,892 (92.9)	2,468 (94.3)	348 (90.9)
	Missing#	1	0	0	49	31	6	49	31	6	49	31	6
	Total	6,392	2,647	389	6,392	2,647	389	6,392	2,647	389	6,392	2,647	389
2016	Death	117 (1.7)	39 (1.4)	28 (6.3)	188 (2.8)	57 (2.1)	31 (7.0)	334 (4.9)	82 (3.0)	40 (9.0)	510 (7.5)	116 (4.3)	46 (10.4)
	Alive	6,767 (98.3)	2,697 (98.6)	418 (93.7)	6,643 (97.2)	2,647 (97.9)	412 (93.0)	6,497 (95.1)	2,622 (97.0)	403 (91.0)	6,321 (92.5)	2,588 (95.7)	397 (89.6)
	Missing#	0	0	0	53	32	3	53	32	3	53	32	3
	Total	6,884	2,736	446	6,884	2,736	446	6,884	2,736	446	6,884	2,736	446
2015-2016	Death	243 (1.8)	91 (1.7)	49 (5.9)	361 (2.7)	132 (2.5)	56 (6.8)	644 (4.9)	196 (3.7)	70 (8.5)	961 (7.3)	264 (5.0)	81 (9.8)
	Alive	13,032 (98.2)	5,292 (98.3)	786 (94.1)	12,813 (97.3)	5,188 (97.5)	770 (93.2)	12,530 (95.1)	5,124 (96.3)	756 (91.5)	12,213 (92.7)	5,056 (95.0)	745 (90.2)
	Missing#	1	0	0	102	63	9	102	63	9	102	63	9
	Total	13,276	5,383	835	13,276	5,383	835	13,276	5,383	835	13,276	5,383	835

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

*****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.

Table 5.7 Overall outcome of patients who underwent PCI, by pre-morbid dyslipidaemia, NCVd-PCI Registry, 2013–2016

Year	*Outcome	Discharge			**30-day			***6-month			****1-year		
		Dyslipidaemia	Non-dyslipidaemia	Not known	Dyslipidaemia	Non-dyslipidaemia	Not known	Dyslipidaemia	Non-dyslipidaemia	Not known	Dyslipidaemia	Non-dyslipidaemia	Not known
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	110 (1.3)	121 (2.8)	89 (6.8)	149 (1.8)	141 (3.2)	92 (7.0)	192 (2.3)	164 (3.8)	93 (7.1)	223 (2.6)	183 (4.2)	94 (7.2)
	Alive	8,364 (98.7)	4,230 (97.2)	1,222 (93.2)	8,325 (98.2)	4,210 (96.8)	1,219 (93.0)	8,282 (97.7)	4,187 (96.2)	1,218 (92.9)	8,251 (97.4)	4,168 (95.8)	1,217 (92.8)
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
	Total	8,474	4,351	1,311	8,474	4,351	1,311	8,474	4,351	1,311	8,474	4,351	1,311
2015	Death	86 (1.6)	77 (2.4)	36 (4.7)	126 (2.4)	103 (3.2)	44 (5.8)	217 (4.1)	182 (5.6)	55 (7.3)	325 (6.1)	239 (7.4)	70 (9.3)
	Alive	5,303 (98.4)	3,196 (97.6)	729 (95.3)	5,218 (97.6)	3,141 (96.8)	710 (94.2)	5,127 (95.9)	3,062 (94.4)	699 (92.7)	5,019 (93.9)	3,005 (92.6)	684 (90.7)
	Missing [#]	1	0	0	46	29	11	46	29	11	46	29	11
	Total	5,390	3,273	765	5,390	3,273	765	5,390	3,273	765	5,390	3,273	765
2016	Death	72 (1.4)	72 (1.8)	40 (5.1)	122 (2.3)	103 (2.6)	51 (6.6)	225 (4.3)	169 (4.3)	62 (8.0)	342 (6.5)	252 (6.4)	78 (10.1)
	Alive	5,220 (98.6)	3,924 (98.2)	738 (94.9)	5,128 (97.7)	3,850 (97.4)	724 (93.4)	5,025 (95.7)	3,784 (95.7)	713 (92.0)	4,908 (93.5)	3,701 (93.6)	697 (89.9)
	Missing [#]	0	0	0	42	43	3	42	43	3	42	43	3
	Total	5,292	3,996	778	5,292	3,996	778	5,292	3,996	778	5,292	3,996	778
2015-2016	Death	158 (1.5)	149 (2.0)	76 (4.9)	248 (2.3)	206 (2.9)	95 (6.2)	442 (4.2)	351 (4.9)	117 (7.7)	667 (6.3)	491 (6.8)	148 (9.7)
	Alive	10,523 (98.5)	7,120 (98.0)	1,467 (95.1)	10,346 (97.7)	6,991 (97.1)	1,434 (93.8)	10,152 (95.8)	6,846 (95.1)	1,412 (92.3)	9,927 (93.7)	6,706 (93.2)	1,381 (90.3)
	Missing [#]	1	0	0	88	72	14	88	72	14	88	72	14
	Total	10,682	7,269	1,543	10,682	7,269	1,543	10,682	7,269	1,543	10,682	7,269	1,543

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.





Table 5.8 Overall outcome of patients who underwent PCI, by PCI status, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Discharge		**30-day		***6-month		****1-year	
		Elective No. (%)	Non-elective No. (%)	Elective No. (%)	Non-elective No. (%)	Elective No. (%)	Non-elective No. (%)	Elective No. (%)	Non-elective No. (%)
2013-2014	Death	51 (0.5)	269 (7.5)	87 (0.8)	295 (8.2)	132 (1.3)	317 (8.8)	164 (1.6)	336 (9.4)
	Alive	10,503 (99.5)	3,313 (92.5)	10,467 (99.2)	3,287 (91.8)	10,422 (98.7)	3,265 (91.2)	10,390 (98.4)	3,246 (90.6)
	Missing	0	0	0	0	0	0	0	0
	Total	10,554	3,582	10,554	3,582	10,554	3,582	10,554	3,582
2015	Death	29 (0.5)	170 (5.6)	72 (1.1)	201 (6.7)	179 (2.8)	275 (9.2)	299 (4.7)	335 (11.2)
	Alive	6,383 (99.5)	2,845 (94.4)	6,274 (98.9)	2,795 (93.3)	6,167 (97.2)	2,721 (90.8)	6,047 (95.3)	2,661 (88.8)
	Missing#	1	0	67	19	67	19	67	19
	Total	6,413	3,015	6,413	3,015	6,413	3,015	6,413	3,015
2016	Death	30 (0.4)	154 (4.9)	72 (1.1)	204 (6.5)	171 (2.5)	285 (9.1)	320 (4.7)	352 (11.2)
	Alive	6,877 (99.6)	3,005 (95.1)	6,771 (98.9)	2,931 (93.5)	6,672 (97.5)	2,850 (90.9)	6,523 (95.3)	2,783 (88.8)
	Missing#	0	0	64	24	64	24	64	24
	Total	6,907	3,159	6,907	3,159	6,907	3,159	6,907	3,159
2015-2016	Death	59 (0.4)	324 (5.2)	144 (1.1)	405 (6.6)	350 (2.7)	560 (9.1)	619 (4.7)	687 (11.2)
	Alive	13,260 (99.6)	5,850 (94.8)	13,045 (98.9)	5,726 (93.4)	12,839 (97.3)	5,571 (90.9)	12,570 (95.3)	5,444 (88.8)
	Missing#	1	0	131	43	131	43	131	43
	Total	13,320	6,174	13,320	6,174	13,320	6,174	13,320	6,174

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.

Table 5.9 Overall outcome of patients who underwent PCI, by ACS, NCV-D-PCI Registry, 2013–2016

Year	*Outcome	Discharge				**30-day				***6-month				****1-year			
		STEMI	NSTEMI	UA	Not available	STEMI	NSTEMI	UA	Not available	STEMI	NSTEMI	UA	Not available	STEMI	NSTEMI	UA	Not available
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	226 (8.1)	39 (3.4)	10 (1.2)	1 (1.4)	246 (8.8)	47 (4.1)	16 (1.9)	1 (1.4)	262 (9.4)	55 (4.8)	22 (2.6)	1 (1.4)	281 (10.1)	57 (5.0)	25 (2.9)	1 (1.4)
	Alive	2,568 (91.9)	1,099 (96.6)	850 (98.8)	72 (98.6)	2,548 (91.2)	1,091 (95.9)	844 (98.1)	72 (98.6)	2,532 (90.6)	1,083 (95.2)	838 (97.4)	72 (98.6)	2,513 (89.9)	1,081 (95.0)	835 (97.1)	72 (98.6)
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	2,794	1,138	860	73	2,794	1,138	860	73	2,794	1,138	860	73	2,794	1,138	860	73
2015	Death	136 (6.0)	27 (2.7)	6 (0.9)	2 (6.7)	153 (6.8)	40 (4.1)	11 (1.7)	3 (10.7)	197 (8.7)	74 (7.5)	21 (3.2)	4 (14.3)	233 (10.3)	96 (9.8)	30 (4.6)	4 (14.3)
	Alive	2,144 (94.0)	960 (97.3)	660 (99.1)	28 (93.3)	2,107 (93.2)	941 (95.9)	647 (98.3)	25 (89.3)	2,063 (91.3)	907 (92.5)	637 (96.8)	24 (85.7)	2,027 (89.7)	885 (90.2)	628 (95.4)	24 (85.7)
	Missing [#]	0	0	1	0	20	6	9	2	20	6	9	2	20	6	9	2
	Total	2,280	987	667	30	2,280	987	667	30	2,280	987	667	30	2,280	987	667	30
2016	Death	132 (5.4)	20 (1.8)	1 (0.2)	0 (0.0)	176 (7.3)	30 (2.8)	5 (1.0)	0 (0.0)	224 (9.3)	65 (6.0)	16 (3.3)	1 (4.2)	275 (11.4)	89 (8.2)	32 (6.5)	4 (16.7)
	Alive	2,298 (94.6)	1,068 (98.2)	494 (99.8)	24 (100.0)	2,237 (92.7)	1,053 (97.2)	486 (99.0)	24 (100.0)	2,189 (90.7)	1,018 (94.0)	475 (96.7)	23 (95.8)	2,138 (88.6)	994 (91.8)	459 (93.5)	20 (83.3)
	Missing [#]	0	0	0	0	17	5	4	0	17	5	4	0	17	5	4	0
	Total	2,430	1,088	495	24	2,430	1,088	495	24	2,430	1,088	495	24	2,430	1,088	495	24
2015-2016	Death	268 (5.7)	47 (2.3)	7 (0.6)	2 (3.7)	329 (7.0)	70 (3.4)	16 (1.4)	3 (5.8)	421 (9.0)	139 (6.7)	37 (3.2)	5 (9.6)	508 (10.9)	185 (9.0)	62 (5.4)	8 (15.4)
	Alive	4,442 (94.3)	2,028 (97.7)	1,154 (99.4)	52 (96.3)	4,344 (93.0)	1,994 (96.6)	1,133 (98.6)	49 (94.2)	4,252 (91.0)	1,925 (93.3)	1,112 (96.8)	47 (90.4)	4,165 (89.1)	1,879 (91.0)	1,087 (94.6)	44 (84.6)
	Missing [#]	0	0	1	0	37	11	13	2	37	11	13	2	37	11	13	2
	Total	4,710	2,075	1,162	54	4,710	2,075	1,162	54	4,710	2,075	1,162	54	4,710	2,075	1,162	54

*The outcome data was derived from the National Death Register data.

**Including patients who died in-hospital.

***Including patients who died in-hospital and at 30 days.

****Including patients who died in-hospital, at 30 days, and six months.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.



**Table 5.10 Medication at discharge for patients who underwent PCI, NCVD-PCI Registry, 2013–2016**

Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of patients	14,136	9,428	10,066	19,494
	No. (%)	No. (%)	No. (%)	No. (%)
#*Medication				
Aspirin	12,412 (89.8)	8,147 (88.3)	8,590 (86.9)	16,737 (87.6)
Clopidogrel	11,330 (82.0)	7,365 (79.8)	7,949 (80.4)	15,314 (80.1)
Ticlopidine	156 (1.1)	88 (1.0)	59 (0.6)	147 (0.8)
**Dual antiplatelet	12,936 (91.5)	8,899 (96.4)	9,389 (95.0)	18,288 (95.7)
Statin	11,975 (86.6)	8,455 (91.6)	8,922 (90.3)	17,377 (90.9)
Beta blocker	9,340 (67.6)	6,591 (71.4)	7,025 (71.1)	13,616 (71.2)
ACE inhibitor	6,634 (48.0)	5,148 (55.8)	5,543 (56.1)	10,691 (55.9)
ARB	1,287 (9.3)	812 (8.8)	818 (8.3)	1,630 (8.5)
Warfarin	146 (1.1)	109 (1.2)	99 (1.0)	208 (1.1)
Prasugrel	105 (0.8)	63 (0.7)	35 (0.4)	98 (0.5)
Ticagrelor	1,277 (9.2)	1,395 (15.1)	1,393 (14.1)	2,788 (14.6)
Others	7,530 (54.5)	4,927 (53.4)	5,490 (55.6)	10,417 (54.5)

*Available for those who were alive.

**Dual antiplatelet defined as the use of a P2Y12 receptor inhibitor (clopidogrel, ticlopidine, ticagrelor or prasugrel) or aspirin.

#Patients were allowed to be in more than one type of category.

Table 5.11 Cause of death of patients who underwent PCI, NCVD-PCI Registry, 2013–2016

Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of patients	14,136	9,428	10,066	19,494
	No. (%)	No. (%)	No. (%)	No. (%)
Cause of death				
Cardiac	247 (90.8)	160 (87.9)	147 (90.7)	307 (89.2)
Renal	4 (1.5)	1 (0.5)	0 (0.0)	1 (0.3)
Other	13 (4.8)	12 (6.6)	11 (6.8)	23 (6.7)
Infection	4 (1.5)	7 (3.8)	3 (1.9)	10 (2.9)
Neurological	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Vascular	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pulmonary	4 (1.5)	2 (1.1)	1 (0.6)	3 (0.9)
Non-cardiac	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Not available	5	3	1	4
Missing	43	14	21	35
Total	320	199	184	383

Table 5.12 Location of death of patients who underwent PCI, NCVD-PCI Registry, 2013–2016

Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of patients	14,136	9,428	10,066	19,494
	No. (%)	No. (%)	No. (%)	No. (%)
Location of death				
In lab	33 (12.5)	22 (12.2)	23 (14.3)	45 (13.2)
Out of lab	232 (87.5)	159 (87.8)	138 (85.7)	297 (86.8)
Not available	5	0	1	1
Missing	50	18	22	40
Total	320	199	184	383



Table 5.13 Outcome at discharge of patients who developed cardiogenic shock peri-procedure, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Cardiogenic shock peri-procedure		
		Yes	No	Missing
		No. (%)	No. (%)	No. (%)
2013-2014	Death	76 (85.4)	242 (1.7)	2 (2.0)
	Alive	13 (14.6)	13,703 (98.3)	100 (98.0)
	Missing	0	0	0
	Total	89	13,945	102
2015	Death	36 (72.0)	163 (1.7)	0 (0.0)
	Alive	14 (28.0)	9,174 (98.3)	40 (100.0)
	Missing [#]	0	0	1
	Total	50	9,337	41
2016	Death	38 (77.6)	145 (1.5)	1 (2.3)
	Alive	11 (22.4)	9,828 (98.5)	43 (97.7)
	Missing [#]	0	0	0
	Total	49	9,973	44
2015-2016	Death	74 (74.7)	308 (1.6)	1 (1.2)
	Alive	25 (25.3)	19,002 (98.4)	83 (98.8)
	Missing [#]	0	0	1
	Total	99	19,310	85

*The outcome data was derived from the National Death Register data.

[#]For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.



Table 5.14 Outcome at discharge, by post-PCI TIMI flow, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Post-PCI TIMI flow					
		0	1	2	3	Not available	Missing
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	17 (4.9)	8 (9.4)	28 (8.6)	297 (1.8)	17 (4.4)	28 (2.2)
	Alive	327 (95.1)	77 (90.6)	298 (91.4)	16,610 (98.2)	371 (95.6)	1,251 (97.8)
	Missing	0	0	0	0	0	0
	Total	344	85	326	16,907	388	1,279
2015	Death	15 (5.8)	14 (23.3)	22 (12.4)	175 (1.6)	5 (1.9)	31 (2.8)
	Alive	242 (94.2)	46 (76.7)	156 (87.6)	10,989 (98.4)	264 (98.1)	1,087 (97.2)
	Missing [#]	0	0	0	2	0	0
	Total	257	60	178	11,166	269	1,118
2016	Death	15 (4.8)	7 (10.9)	20 (11.4)	146 (1.2)	8 (5.6)	26 (2.2)
	Alive	296 (95.2)	57 (89.1)	155 (88.6)	11,902 (98.8)	134 (94.4)	1,155 (97.8)
	Missing [#]	0	0	0	0	0	0
	Total	311	64	175	12,048	142	1,181
2015-2016	Death	30 (5.3)	21 (16.9)	42 (11.9)	321 (1.4)	13 (3.2)	57 (2.5)
	Alive	538 (94.7)	103 (83.1)	311 (88.1)	22,891 (98.6)	398 (96.8)	2,242 (97.5)
	Missing [#]	0	0	0	2	0	0
	Total	568	124	353	23,214	411	2,299

*The outcome data was derived from the National Death Register data.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.

Table 5.15 Outcome at discharge, by contrast volume used, NCVD-PCI Registry, 2013–2016

Year	*Outcome	Contrast volume, ml			
		≥300	<300	Not available	Missing
		No. (%)	No. (%)	No. (%)	No. (%)
2013-2014	Death	19 (2.7)	231 (2.0)	37 (3.9)	33 (3.7)
	Alive	676 (97.3)	11,361 (98.0)	921 (96.1)	858 (96.3)
	Missing	0	0	0	0
	Total	695	11,592	958	891
2015	Death	10 (2.5)	165 (2.0)	17 (3.8)	7 (1.5)
	Alive	390 (97.5)	7,948 (98.0)	434 (96.2)	456 (98.5)
	Missing [#]	0	1	0	0
	Total	400	8,114	451	463
2016	Death	9 (2.3)	149 (1.7)	10 (2.4)	16 (3.1)
	Alive	380 (97.7)	8,596 (98.3)	408 (97.6)	498 (96.9)
	Missing [#]	0	0	0	0
	Total	389	8,745	418	514
2015-2016	Death	19 (2.4)	314 (1.9)	27 (3.1)	23 (2.4)
	Alive	770 (97.6)	16,544 (98.1)	842 (96.9)	954 (97.6)
	Missing [#]	0	1	0	0
	Total	789	16,859	869	977

*The outcome data was derived from the National Death Register data.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.



Table 5.16 Summary of 30-day readmission status of patients who underwent PCI, NCVD-PCI Registry, 2013–2016 (N = total no. of procedures for 30-day follow-up)

Year	2013 – 2014	2015	2016	2015 – 2016
Total no. of procedures	4,570	5,948	6,245	12,193
	No. (%)	No. (%)	No. (%)	No. (%)
Readmission, No. (%)				
Yes	234 (5.5)	453 (8.3)	374 (6.9)	827 (7.6)
No	4,003 (94.5)	4,988 (91.7)	5,062 (93.1)	10,050 (92.4)
Missing	333	507	809	1,316
Readmission reason, No. (%)				
Non-cardiac	26 (14.4)	58 (15.9)	24 (8.3)	82 (12.5)
CHF	9 (5.0)	12 (3.3)	5 (1.7)	17 (2.6)
Recurrent angina	18 (9.9)	35 (9.6)	23 (7.9)	58 (8.9)
Arrhythmia	0 (0.0)	2 (0.5)	2 (0.7)	4 (0.6)
ACS	16 (8.8)	25 (6.8)	24 (8.3)	49 (7.5)
STEMI	6 (46.2)	2 (10.0)	11 (45.8)	13 (29.5)
NSTEMI	4 (30.8)	8 (40.0)	5 (20.8)	13 (29.5)
UA	3 (23.1)	10 (50.0)	8 (33.3)	18 (40.9)
Not available	2	2	0	2
Missing	1	3	0	3
Staged revascularisation	112 (61.9)	233 (63.8)	212 (73.1)	445 (67.9)
PCI	103 (97.2)	217 (98.6)	202 (98.5)	419 (98.6)
CABG	3 (2.8)	3 (1.4)	3 (1.5)	6 (1.4)
Not available	1	1	4	5
Missing	5	12	3	15
Not available	31	66	69	135
Missing	22	22	15	37
Total	234	453	374	827



Table 5.17 Procedural complications and clinical outcomes, according to PCI status, NCVD-PCI Registry, 2013–2016

Year	2013 – 2014				2015				2016				2015 – 2016			
	14,136				9,428				10,066				19,494			
	Elective	NSTEMI /UA	STEMI	No. (%)	Elective	NSTEMI /UA	STEMI	No. (%)	Elective	NSTEMI /UA	STEMI	No. (%)	Elective	NSTEMI /UA	STEMI	No. (%)
*Complications and clinical outcomes	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Procedural complications																
Periprocedural MI/ Significant periprocedural MI	34 (0.3)	16 (1.3)	42 (1.6)	13 (0.2)	8 (0.8)	22 (1.1)	11 (0.2)	5 (0.5)	18 (0.9)	24 (0.2)	13 (0.6)	40 (1.0)				
Emergency reintervention/PCI	37 (0.4)	16 (1.3)	52 (2.0)	16 (0.3)	8 (0.8)	14 (0.7)	10 (0.1)	3 (0.3)	8 (0.4)	26 (0.2)	11 (0.5)	22 (0.6)				
Stent thrombosis	6 (17.6)	1 (7.1)	5 (10.0)	4 (25.0)	5 (62.5)	4 (33.3)	5 (55.6)	0 (0.0)	2 (25.0)	9 (36.0)	5 (55.6)	6 (30.0)				
Dissection	1 (3.0)	0 (0.0)	1 (2.0)	0 (0.0)	1 (14.3)	0 (0.0)	1 (14.3)	0 (0.0)	0 (0.0)	1 (4.8)	1 (12.5)	0 (0.0)				
Cardiac perforation	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.6)				
Coronary perforation	1 (3.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)				
New ischaemia	2 (5.9)	1 (9.1)	7 (14.3)	7 (50.0)	3 (50.0)	4 (40.0)	1 (14.3)	1 (100.0)	2 (25.0)	8 (38.1)	4 (57.1)	6 (33.3)				
Reinfarction	0 (0.0)	2 (16.7)	1 (2.0)	0 (0.0)	1 (14.3)	0 (0.0)	2 (28.6)	1 (50.0)	1 (12.5)	2 (9.5)	2 (22.2)	1 (5.6)				
Cardiac tamponade	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)				
Bail-out CABG	2 (0.0)	0 (0.0)	0 (0.0)	2 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.2)	1 (0.0)	2 (0.0)	2 (0.1)	1 (0.0)				
Cardiogenic shock	11 (0.1)	5 (0.4)	68 (2.7)	12 (0.2)	5 (0.5)	33 (1.7)	9 (0.1)	6 (0.5)	34 (1.7)	21 (0.2)	11 (0.5)	67 (1.7)				
Arrhythmia	20 (0.2)	7 (0.5)	85 (3.3)	20 (0.3)	5 (0.5)	34 (1.8)	13 (0.2)	3 (0.3)	28 (1.4)	33 (0.2)	8 (0.4)	62 (1.6)				
TIA/stroke	2 (0.0)	1 (0.1)	4 (0.2)	2 (0.0)	0 (0.0)	3 (0.2)	0 (0.0)	1 (0.1)	0 (0.0)	2 (0.0)	1 (0.0)	3 (0.1)				
Tamponade	0 (0.0)	0 (0.0)	2 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	2 (0.0)	2 (0.2)	0 (0.0)	2 (0.0)	3 (0.1)	0 (0.0)				
Contrast reaction	9 (0.1)	2 (0.2)	0 (0.0)	3 (0.0)	1 (0.1)	1 (0.1)	3 (0.0)	1 (0.1)	0 (0.0)	6 (0.0)	2 (0.1)	1 (0.0)				
New onset/worsen heart failure	3 (0.0)	1 (0.1)	19 (0.7)	2 (0.0)	0 (0.0)	8 (0.4)	1 (0.0)	4 (0.4)	7 (0.3)	3 (0.0)	4 (0.2)	15 (0.4)				
New renal impairment	41 (0.4)	12 (0.9)	25 (1.0)	24 (0.4)	6 (0.6)	13 (0.7)	12 (0.2)	6 (0.5)	6 (0.3)	36 (0.3)	12 (0.6)	19 (0.5)				
Bleeding	10 (0.1)	5 (0.4)	11 (0.4)	8 (0.1)	3 (0.3)	8 (0.4)	2 (0.0)	0 (0.0)	6 (0.3)	10 (0.1)	3 (0.1)	14 (0.4)				
Access site occlusion	1 (0.0)	0 (0.0)	0 (0.0)	5 (0.1)	2 (0.2)	1 (0.1)	1 (0.0)	2 (0.2)	1 (0.0)	6 (0.0)	4 (0.2)	2 (0.1)				
Loss of distal/radial pulse	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.0)	1 (0.0)	1 (0.0)				
Dissection	5 (0.0)	1 (0.1)	1 (0.0)	4 (0.1)	1 (0.1)	1 (0.1)	10 (0.1)	2 (0.2)	1 (0.0)	14 (0.1)	3 (0.1)	2 (0.1)				
Pseudoaneurysm	9 (0.1)	0 (0.0)	2 (0.1)	2 (0.0)	0 (0.0)	1 (0.1)	2 (0.0)	1 (0.1)	0 (0.0)	4 (0.0)	1 (0.0)	1 (0.0)				
Vascular perforation	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	2 (0.2)	0 (0.0)	3 (0.0)	1 (0.1)	1 (0.0)	4 (0.0)	3 (0.1)	1 (0.0)				

**Table 5.18 Heart rate at presentation vs outcome, NCVD-PCI Registry, 2013–2016**

Year	Heart rate at presentation (beats/minute)	*Outcome		
		Death	Alive	Missing [#]
		No. (%)	No. (%)	No. (%)
2013-2014	<90	114 (43.3)	10,328 (84.9)	0 (0.0)
	≥90	149 (56.7)	1,837 (15.1)	0 (0.0)
	Missing	57	1,651	0
	Total	320	13,816	0
2015	<90	60 (37.3)	6,759 (83.7)	1 (100.0)
	≥90	101 (62.7)	1,321 (16.3)	0 (0.0)
	Missing	38	1,148	0
	Total	199	9,228	1
2016	<90	62 (43.1)	7,666 (84.5)	0 (0.0)
	≥90	82 (56.9)	1,409 (15.5)	0 (0.0)
	Missing	40	807	0
	Total	184	9,882	0
2015-2016	<90	122 (40.0)	14,425 (84.1)	1 (100.0)
	≥90	183 (60.0)	2,730 (15.9)	0 (0.0)
	Missing	78	1,955	0
	Total	383	19,110	1

*The outcome data was derived from the National Death Register data.

#For foreigner and incomplete identification (NRIC), mortality status cannot be matched with the National Death Register.

Note: Patients with the status "transferred to other centre" and "lost to follow-up" were categorised as "alive" patients.

Table 5.19 Heart rate at presentation vs length of stay, NCVD-PCI Registry, 2013–2016

Year	Length of stay	Heart rate at presentation (beats/minute)		
		<90	≥90	Missing
		No. (%)	No. (%)	No. (%)
2013-2014	N	10,322	1,837	1,651
	Mean (SD)	4.9 (14.8)	6.0 (16.6)	4.7 (13.7)
	Median (Min – Max)	4.0 (1.0 – 375.0)	4.0 (1.0 – 513.0)	3.0 (1.0 – 371.0)
	Missing, No. (%)	3 (0.0)	0 (0.0)	0 (0.0)
2015	N	6,724	1,394	1,164
	Mean (SD)	4.3 (4.8)	5.6 (7.1)	4.7 (5.8)
	Median (Min – Max)	3.0 (1.0 – 100.0)	4.0 (1.0 – 99.0)	3.0 (1.0 – 74.0)
	Missing, No. (%)	96 (1.4)	28 (2.0)	22 (1.9)
2016	N	7,621	1,465	828
	Mean (SD)	4.2 (4.4)	5.2 (6.8)	4.5 (5.8)
	Median (Min – Max)	3.0 (1.0 – 96.0)	4.0 (1.0 – 99.0)	3.0 (1.0 – 64.0)
	Missing, No. (%)	107 (1.4)	26 (1.7)	19 (2.2)
2015-2016	N	14,345	2,859	1,992
	Mean (SD)	4.3 (4.6)	5.4 (6.9)	4.6 (5.8)
	Median (Min – Max)	3.0 (1.0 – 100.0)	4.0 (1.0 – 99.0)	3.0 (1.0 – 74.0)
	Missing, No. (%)	203 (1.4)	54 (1.9)	41 (2.0)



Table 5.20 Prognostic factors for in-hospital mortality among patients who underwent PCI, NCVD-PCI Registry, 2013–2016

Factor	2013 – 2014 Total no. of patients = 14,136					2015 – 2016 Total no. of patients = 19,494				
	N	Adjusted hazard ratio	95% CI		*p-value	N	Adjusted hazard ratio	95% CI		*p-value
Age						19,494	1.05	1.02	1.08	0.001
Gender										
Male (ref)	11,816	1.00								
Female	2,317	1.66	0.79	3.48	0.177					
PCI status										
Elective (ref)	10,551	1.00				13,320	1.00			
NSTEMI/UA	1,221	3.04	1.09	8.52	0.034	2,175	3.97	1.51	10.44	0.005
AMI/STEMI	2,361	4.20	1.64	10.77	0.003	3,999	3.72	1.54	8.97	0.003
**Diabetes mellitus										
No (ref)										
Yes										
**Hypertension										
No (ref)										
Yes										
Killip class										
I&II (ref)	5,939	1.00				10,748	1.00			
III&IV	550	2.97	1.47	6.02	0.002	703	7.59	4.05	14.22	<0.001
Smoking status										
Never (ref)										
Former smokers										
Current smokers										
Left ventricular ejection fraction										
<30	259	4.21	1.47	12.01	0.007	420	13.53	4.19	43.72	<0.001
30 – 50	2,105	1.68	0.66	4.30	0.278	3,370	4.36	1.43	13.32	<0.001
>50 (ref)	2,675	1.00				3,699	1.00			
Serum creatinine >200 µmol/L										
No (ref)	11,447	1.00								
Yes	616	3.42	1.64	7.11	0.001					

*using Cox regression with backward stepwise variable selection.

**The "No" category in these variables included the "Not known" category.



Table 5.21a Prognostic factors for 30-days mortality among patients who underwent PCI, NCVD-PCI Registry, 2013–2016

Factor	2013 – 2014 Total no. of patients = 14,136					2015 – 2016 Total no. of patients = 19,494				
	N	Adjusted hazard ratio	95% CI		*p-value	N	Adjusted hazard ratio	95% CI		*p-value
Age group										
20 – <40 (ref)	235	1.00				1,071	1.00			
40 – <60	2,327	0.71	0.16	3.21	0.653	10,311	1.62	0.94	2.79	0.083
≥60	1,651	1.52	0.34	6.79	0.584	8,112	3.30	1.92	5.67	0.000
Gender[^]										
Male (ref)										
Female										
PCI status										
Elective (ref)	3,189	1.00				13,320	1.00			
NSTEMI/UA	307	2.33	0.84	6.47	0.103	2,175	2.84	2.01	4.02	<0.001
AMI/STEMI	717	1.52	0.63	3.65	0.352	3,999	4.44	3.31	5.96	<0.001
**Myocardial infarction history										
No (ref)	2,638	1.00				16,707	1.00			
Yes	1,575	0.44	0.18	1.05	0.066	2,787	0.59	0.41	0.84	0.003
Killip class										
I&II (ref)	2,120	1.00				10,748	1.00			
III&IV	114	4.22	1.69	10.55	0.002	703	7.78	6.34	9.55	<0.001
Heart rate[^]										
<40										
40 – <60										
60 – <80 (ref)										
80 – <100										
≥100										
Extent of coronary artery disease										
Single vessel disease (ref)	2,832	1.00				12,862	1.00			
Multi vessels disease	1,189	1.76	0.83	3.73	0.137	5,851	1.15	0.93	1.40	0.191
Left main/LMS	128	2.02	0.44	9.32	0.369	514	2.79	1.99	3.90	<0.001
Graft	31	20.64	2.39	178.01	0.006	263	0.53	0.07	3.82	0.531
Left ventricular ejection fraction[^]										
<30										
30 – 50										
>50 (ref)										



Factor	2013 – 2014 Total no. of patients = 14,136					2015 – 2016 Total no. of patients = 19,494				
	N	Adjusted hazard ratio	95% CI		*p-value	N	Adjusted hazard ratio	95% CI		*p-value
Serum creatinine >200 µmol/L[^]										
No (ref)										
Yes										
**Cerebrovascular disease										
No (ref)	4,068	1.00				19,020	1.00			
Yes	145	1.14	0.25	5.10	0.865	474	1.23	0.76	1.97	0.400
Previous PCI										
No (ref)	3,238	1.00				16,094	1.00			
Yes	975	0.85	0.29	2.50	0.771	3,400	0.79	0.55	1.12	0.187

*using Cox regression with forced model analysis.

**The "No" category in these variables included the "Not known" category.

[^]Variables were not included in the variables selection method for the 2015–2016 analysis.