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Supporting Information

Supplementary results

**This appendix was part of the submitted manuscript and has been peer reviewed.
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Appendix to: Nehme E, Anderson D, Salathiel R, et al. Out-of-hospital cardiac arrests in Victoria, 2003–2022: retrospective analysis of Victorian Ambulance Cardiac Arrest Registry data. *Med J Aust* 2024; doi: 10.5694/mja2.52532.

Table 1. Crude and age-standardised incidence of out-of-hospital cardiac arrest, Victoria, 2003–2022*

	Incidence (per 100,000 population)	
	Crude	Age-standardised
2003	90.6	89.1
2004	83.0	80.9
2005	85.4	82.6
2006	82.9	79.5
2007	83.2	79.2
2008	84.6	79.8
2009	86.4	81.2
2010	81.4	76.0
2011	82.8	76.6
2012	82.6	76.2
2013	83.2	75.9
2014	87.3	79.1
2015	85.2	77.3
2016	88.5	80.5
2017	89.0	80.5
2018	87.9	79.0
2019	93.0	83.1
2020	92.5	81.5
2021	97.3	83.8
2022	107.4	91.2

* Excludes emergency medical service-witnessed events.

Table 2. Survival to hospital discharge after out-of-hospital cardiac arrest, Victoria, 2003–2022*

	All attempted resuscitation cases	All cases with initial ventricular fibrillation or ventricular tachycardia and attempted resuscitation by emergency medical services	Utstein comparator group[†]
2003	109/1723 (6.3%)	82/588 (13.9%)	68/445 (15.3%)
2004	132/1779 (7.4%)	103/617 (16.7%)	86/466 (18.5%)
2005	137/1699 (8.1%)	107/626 (17.1%)	91/484 (18.8%)
2006	146 /1680 (8.7%)	113/556 (20.3%)	97/429 (22.6%)
2007	147/1703 (8.6%)	107/509 (21.0%)	92/366 (25.1%)
2008	180/1765 (10.2%)	134/552 (24.3%)	109/433 (25.2%)
2009	198/1854 (10.7%)	158/565 (28.0%)	140/457 (30.6%)
2010	198/1889 (10.5%)	163/596 (27.3%)	135/462 (29.2%)
2011	215/1983 (10.8%)	183/637 (28.7%)	154/479 (32.2%)
2012	227/2053 (11.1%)	188/629 (29.9%)	166/506 (32.8%)
2013	202/2180 (9.3%)	168/625 (26.9%)	151/500 (30.2%)
2014	235/2326 (10.1%)	193/669 (28.8%)	174/534 (32.6%)
2015	254/2270 (11.2%)	201/643 (31.3%)	166/492 (33.7%)
2016	254/2375 (10.7%)	209/625 (33.4%)	179/490 (36.5%)
2017	257/2519 (10.2%)	200/600 (33.3%)	167/453 (36.9%)
2018	280/2505 (11.2%)	221/657 (33.6%)	195/496 (39.3%)
2019	303/2632 (11.5%)	240/626 (38.3%)	207/484 (42.8%)
2020	206/2481 (8.3%)	162/596 (27.2%)	141/449 (31.4%)
2021	215/2626 (8.2%)	179/606 (29.5%)	155/452 (34.3%)
2022	265/2839 (9.3%)	216/690 (31.3%)	187/528 (35.4%)

* Excludes emergency medical service-witnessed events.

† Bystander-witnessed arrests in which the initial cardiac rhythm was ventricular fibrillation or ventricular tachycardia, and resuscitation was attempted by emergency medical services.

Table 3. Survival to hospital discharge after out-of-hospital cardiac arrest, Victoria, 2003–2022, for cases in the Utstein comparator group*

	Odds ratio (95% confidence interval)
2003	0.39 (0.28–0.54)
2004	0.51 (0.37–0.69)
2005	0.51 (0.38–0.70)
2006	0.55 (0.41–0.75)
2007	0.66 (0.48–0.90)
2008	0.69 (0.51–0.94)
2009	0.96 (0.72–1.28)
2010	0.86 (0.64–1.14)
2011	1.00 (0.75–1.32)
2012	1
2013	0.93 (0.70–1.23)
2014	1.14 (0.86–1.49)
2015	1.09 (0.83–1.45)
2016	1.23 (0.93–1.62)
2017	1.22 (0.92–1.61)
2018	1.37 (1.04–1.80)
2019	1.68 (1.28–2.21)
2020	1.06 (0.80–1.42)
2021	1.18 (0.89–1.56)
2022	1.19 (0.90–1.56)

* Adjusted for study year, age, gender, aetiology (presumed cardiac v trauma or hanging, overdose or poisoning, or other), arrest location (public location v private residence, aged care facility, or other), and arrest geographic location (metropolitan v regional).

**Table 4. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022.*
Bystander cardiopulmonary resuscitation**

	All cases	Attempted resuscitation by emergency medical services	Arrest witnessed in a public location
2003	898/4457 (20.1%)	721/1737 (41.5%)	184/451 (40.8%)
2004	860/4213 (20.4%)	708/1806 (39.2%)	202/437 (46.2%)
2005	803/4351 (18.5%)	683/1712 (39.9%)	197/450 (43.8%)
2006	783/4312 (18.2%)	633/1710 (37.0%)	179/409 (43.8%)
2007	956/4449 (21.5%)	788/1732 (45.5%)	183/362 (50.6%)
2008	1143/4570 (25.0%)	908/1787 (50.8%)	185/400 (46.3%)
2009	1307/4773 (27.4%)	1019/1873 (54.4%)	233/446 (52.2%)
2010	1382/4540 (30.4%)	1088/1912 (56.9%)	239/469 (51.0%)
2011	1659/4644 (35.7%)	1268/1987 (63.8%)	284/474 (59.9%)
2012	1817/4747 (38.3%)	1389/2061 (67.4%)	299/516 (57.9%)
2013	1969/4817 (40.9%)	1534/2187 (70.1%)	290/478 (60.7%)
2014	2199/5173 (42.5%)	1716/2331 (73.6%)	311/483 (64.4%)
2015	2100/5162 (40.7%)	1670/2279 (73.3%)	294/469 (62.7%)
2016	2173/5432 (40.0%)	1716/2381 (72.1%)	313/494 (63.4%)
2017	2143/5593 (38.3%)	1821/2534 (71.9%)	321/492 (65.2%)
2018	2194/5623 (39.0%)	1809/2515 (71.9%)	291/459 (63.4%)
2019	2419/6092 (39.7%)	1937/2643 (73.3%)	329/489 (67.3%)
2020	2410/6113 (39.4%)	1825/2489 (73.3%)	207/337 (61.4%)
2021	2455/6374 (38.5%)	1877/2655 (70.7%)	270/411 (65.7%)
2022	2847/7157 (39.8%)	2107/2864 (73.6%)	336/496 (67.7%)

* Excludes emergency medical service-witnessed events.

Table 5. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022*. Initially shockable rhythm

	All cases	Attempted resuscitation by emergency medical services
2003	598/4445 (13.5%)	596/1728 (34.5%)
2004	636/4197 (15.2%)	630/1798 (35.0%)
2005	639/4334 (14.7%)	632/1706 (37.1%)
2006	572/4291 (13.3%)	569/1696 (33.6%)
2007	526/4424 (11.9%)	523/1718 (30.4%)
2008	571/4549 (12.6%)	571/1770 (32.3%)
2009	578/4758 (12.2%)	575/1859 (30.9%)
2010	620/4519 (13.7%)	612/1891 (32.4%)
2011	644/4618 (14.0%)	639/1968 (32.5%)
2012	638/4739 (13.5%)	633/2053 (30.8%)
2013	640/4809 (13.3%)	631/2181 (28.9%)
2014	675/5163 (13.1%)	673/2323 (29.0%)
2015	656/5147 (12.8%)	648/2264 (28.6%)
2016	633/5428 (11.7%)	627/2377 (26.4%)
2017	615/5573 (11.0%)	610/2519 (24.2%)
2018	674/5615 (12.0%)	663/2508 (26.4%)
2019	639/6072 (10.5%)	628/2625 (23.9%)
2020	618/6091 (10.2%)	600/2476 (24.2%)
2021	624/6367 (9.8%)	617/2649 (23.3%)
2022	713/7148 (10.0%)	700/2856 (24.5%)

* Excludes emergency medical service-witnessed events.

Table 6. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022*. Initial defibrillation with public automated external defibrillator

	All initially shockable rhythms	Initially shockable rhythm, arrest witnessed in a public location
2003	6/592 (1.0%)	3/152 (2.0%)
2004	5/626 (0.8%)	5/189 (2.7%)
2005	13/624 (2.1%)	7/166 (4.2%)
2006	8/564 (1.4%)	2/184 (1.1%)
2007	15/514 (2.9%)	4/154 (2.6%)
2008	21/565 (3.7%)	9/169 (5.3%)
2009	25/571 (4.4%)	14/191 (7.3%)
2010	24/607 (4.0%)	14/177 (7.9%)
2011	41/637 (6.4%)	20/202 (9.9%)
2012	56/632 (8.9%)	40/205 (19.5%)
2013	60/628 (9.6%)	39/189 (20.6%)
2014	78/672 (11.6%)	52/204 (25.5%)
2015	64/645 (9.9%)	43/193 (22.3%)
2016	78/625 (12.5%)	52/193 (26.9%)
2017	78/607 (12.9%)	53/192 (27.6%)
2018	104/660 (15.8%)	75/194 (38.7%)
2019	105/624 (16.8%)	73/210 (34.8%)
2020	72/596 (12.1%)	38/117 (32.5%)
2021	88/615 (14.3%)	52/155 (33.6%)
2022	123/693 (17.8%)	70/199 (35.2%)

* Excludes emergency medical service-witnessed events. Includes patients with an attempted resuscitation by emergency medical services.

Table 7. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022*. Return of spontaneous circulation

	Attempted resuscitation by emergency medical services	Cases with initial ventricular fibrillation or ventricular tachycardia and attempted resuscitation by emergency medical services	Utstein comparator group[†]
2003	571/1,737 (32.9%)	285/596 (47.8%)	216/452 (47.8%)
2004	535/1,806 (29.6%)	273/630 (43.3%)	218/477 (45.7%)
2005	495/1,712 (28.9%)	256/632 (40.5%)	212/489 (43.4%)
2006	534/1,710 (31.2%)	263/569 (46.2%)	219/439 (49.9%)
2007	573/1,732 (33.1%)	261/523 (49.9%)	206/378 (54.5%)
2008	654/1,787 (36.6%)	313/571 (54.8%)	258/451 (57.2%)
2009	751/1,873 (40.1%)	358/575 (62.3%)	298/465 (64.1%)
2010	773/1,912 (40.4%)	362/612 (59.2%)	296/476 (62.2%)
2011	761/1,987 (38.3%)	385/639 (60.3%)	302/480 (62.9%)
2012	775/2,061 (37.6%)	370/633 (58.5%)	313/510 (61.4%)
2013	778/2,187 (35.6%)	380/631 (60.2%)	322/506 (63.6%)
2014	852/2,331 (36.6%)	428/673 (63.6%)	362/537 (67.4%)
2015	798/2,279 (35.0%)	397/648 (61.3%)	320/497 (64.4%)
2016	797/2,381 (33.5%)	396/627 (63.2%)	328/492 (66.7%)
2017	769/2,534 (30.4%)	368/610 (60.3%)	293/460 (63.7%)
2018	831/2,515 (33.0%)	390/663 (58.8%)	320/502 (63.8%)
2019	903/2,643 (34.2%)	401/628 (63.9%)	323/484 (66.7%)
2020	735/2,489 (29.5%)	339/600 (56.5%)	273/451 (60.5%)
2021	806/2,655 (30.4%)	371/617 (60.1%)	307/463 (66.3%)
2022	980/2,864 (34.2%)	434/700 (62.0%)	354/538 (65.8%)

* Excludes emergency medical service-witnessed events.

† Bystander-witnessed arrests in which the initial cardiac rhythm was ventricular fibrillation or ventricular tachycardia, and resuscitation was attempted by emergency medical services.

Table 8. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022*. Survival to hospital arrival

	Attempted resuscitation by emergency medical services	All cases with initial ventricular fibrillation or ventricular tachycardia and attempted resuscitation by emergency medical services	Utstein comparator group[†]
2003	467/1,726 (27.1%)	231/594 (38.9%)	179/450 (39.8%)
2004	442/1,793 (24.7%)	230/623 (36.9%)	187/473 (39.5%)
2005	428/1,692 (25.3%)	227/623 (36.4%)	189/482 (39.2%)
2006	439/1,691 (26.0%)	221/559 (39.5%)	183/430 (42.6%)
2007	498/1,710 (29.1%)	243/515 (47.2%)	196/371 (52.8%)
2008	550/1,763 (31.2%)	274/561 (48.8%)	227/442 (51.4%)
2009	635/1,860 (34.1%)	316/573 (55.2%)	266/463 (57.5%)
2010	657/1,904 (34.5%)	317/610 (52.0%)	261/474 (55.1%)
2011	630/1,981 (31.8%)	333/637 (52.3%)	269/479 (56.2%)
2012	642/2,051 (31.3%)	329/630 (52.2%)	281/508 (55.3%)
2013	614/2,185 (28.1%)	310/630 (49.2%)	267/505 (52.9%)
2014	696/2,325 (29.9%)	366/671 (54.6%)	314/535 (58.7%)
2015	657/2,275 (28.9%)	348/648 (53.7%)	280/497 (56.3%)
2016	644/2,377 (27.1%)	342/627 (54.6%)	287/492 (58.3%)
2017	615/2,528 (24.3%)	317/609 (52.1%)	255/460 (55.4%)
2018	694/2,514 (27.6%)	336/663 (50.7%)	281/502 (56.0%)
2019	766/2,640 (29.0%)	367/628 (58.4%)	294/484 (60.7%)
2020	606/2,489 (24.4%)	293/600 (48.8%)	240/451 (53.2%)
2021	690/2,653 (26.0%)	338/616 (54.9%)	278/462 (60.2%)
2022	791/2,864 (27.6%)	374/700 (53.4%)	309/538 (57.4%)

* Excludes emergency medical service-witnessed events.

† Bystander-witnessed arrests in which the initial cardiac rhythm was ventricular fibrillation or ventricular tachycardia, and resuscitation was attempted by emergency medical services.

Table 9. Out-of-hospital cardiac arrest event characteristics, Victoria, 2003–2022*. Twelve-month outcomes

	EQ-5D index: full health	Glasgow Outcomes Scale-Extended: moderate disability or good recovery
2010	73/230 (31.7%)	189/231 (81.8%)
2011	81/222 (36.5%)	181/225 (80.4%)
2012	109/247 (44.1%)	218/246 (88.6%)
2013	93/222 (41.9%)	214/225 (95.1%)
2014	124/256 (48.4%)	234/256 (91.4%)
2015	112/249 (45.0%)	242/288 (84.0%)
2016	87/281 (31.0%)	249/291 (85.6%)
2017	109/259 (42.1%)	234/269 (87.0%)
2018	131/305 (43.0%)	275/306 (89.9%)
2019	101/296 (34.1%)	239/296 (80.7%)
2020	76/238 (31.9%)	184/238 (77.3%)
2021	77/236 (32.6%)	190/236 (80.5%)
2022	45/120 (37.5%)	105/121 (86.8%)

* Excludes emergency medical service-witnessed events.