

2004 ANNUAL REPORT

PROVINCIAL OUT-OF-HOSPITAL ADULT CARDIAC ARRESTS

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Office of the Provincial Medical Director

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Executive Summary

This is the 7th Nova Scotia Provincial Annual Out of Hospital Adult Cardiac Arrest (OOHCA) Report. We are also in the process of publishing a seven year study of the determinants of survival from out of hospital cardiac arrests in Nova Scotia.

Though Cardiac Arrests account for just over 1% of all calls (2% of all emergency calls), this complaint is a tracer condition in most EMS systems. Several studies¹⁻⁵ have shown that the major determinants of survival from out of hospital cardiac arrests are witnessed collapse, public (vs private) location, short interval to first defibrillation and presenting arrhythmia of VF/VT on arrival of defibrillator. Studies¹⁻⁴ also note that bystander is a determinant of survival, however our study of the past seven years of provincial data has not demonstrated that bystander CPR has improved survival. As this is incongruent with other studies we are reviewing our data.

2004, like 2003, showed lower survival rates (3.8%) than the previous 4 years. Although there is not enough measurements to construct a control chart, it appears that these lower rates are still within 3 standard deviations of the mean and therefore within normal statistical variation. The lower survival rate reflects the fact that 40% of arrests in Nova Scotia occur in rural areas. De Maio⁶ has shown an exponential relationship between survival and interval to defibrillation. Few survivors have a call response interval of greater than 9 minutes. As with other years and systems, approximately 80% of arrests occur in a private residence. Unfortunately only 60% of these are witnessed and less than half of these (28%) receive bystander CPR. Patients who arrest in public are three times more likely to survive than those who arrest in a private residence. This is thought to be due to more arrests in public being witnessed, having a quicker call to 911 and a greater percentage of bystander CPR.

The vast majority of survivors are found in VF/VT. Although we continue to have some survivors for Asystole (2) and for PEA (3).

The bystander CPR rate for NS of 34.4% continues to fall within the range found in Canada (14 - 46%)⁷. The provincial CPR rate has ranged from 31.7% in 1998 to 37.5% in 2003. The most striking statistic is the apparent lack of improvement in survival rare of patients who receive bystander CPR. This is in contrast to several large studies. One possibility is that if bystander CPR is not documented on the PCR, it is entered into the database as no bystander CPR. Another possibility is bystanders doing CPR stop when the paramedics or MFRs pull up. Therefore it appears no bystander CPR was done.

The incidence of out of hospital cardiac arrest in Nova Scotia is 166.8 for 100,000 population (over the age of 15) and varies from 128.5 in the Capital District Health Authority to 247.1 in the Pictou County District Health Authority. It would be unfair to make any conclusions based on one year's data and we will have to look back at several years' data when it is accumulated to truly evaluate the incidence of cardiac arrest in the DHAs. The incidence cited in the literature ranges from 32 - 128 per 100,000 population.

Our higher incidence might reflect the prevalence of heart disease in this province and/or a higher percentage of older people living in the province of NS. The highest incidence of OOHCA is in males 60 - 69 years and in females 80 - 89 years.

The highest survival to discharge rate in 2004 was in Pictou County DHA (12.9%). The highest survival rate by MOP was for the eastern shore paramedics and Dr. Don MacDonald

Again I would like to congratulate all paramedics, QCMs, supervisors, regional managers and MOPs for their efforts and dedication to pre-hospital care.

This fall will see publication of the newest AHA/ILCCR resuscitation guidelines. We will update our protocols accordingly with the hope that this will help our survival rate. We will also continue to encourage traditional and non traditional first responders to obtain AEDs and we will approach the province and municipalities regarding the placing of AEDs in hockey arenas given last years incidence of 19 cardiac arrests in these facilities.

Cerebral Performance Category Scores

2003 marked the first year we collected information on our survivors.

Survivors who consent are interviewed using the Cerebral Performance Category (CPC) scale. On this scale a score of 1 or 2 is considered a good outcome. In 2003 there were 21 survivors, 20 had a CPC of 1 and 1 had a score of 2. In 2004 there were 24 survivors, 13 with a CPC of 1, 5 with a 2 score and 1 with a 3. Five (5) could not be assessed.

1 Stiell IG, et al: Advanced Cardiac Life Support in Out-of-Hospital Cardiac Arrest. *N Engl J Med* 2004;351(7):647-656.

2 Valenzuela TD, et al: Estimating Effectiveness of Cardiac Arrest Interventions - A Logistic Regression Survival Model. *Circulation* 1997;96:3308-3313.

3 Nichol G, et al: Acumulative Meta-Analysis of the Effectiveness of Defibrillator-Capable Emergency Medical Services for Victims of Out-of-Hospital Cardiac Arrest. *Ann Emerg Med* 1999;34:4:517-525.

4 Wilcox-Gok VL: Survival from Out-of-Hospital Cardiac Arrest: A Multivariate Analysis. *Med Care* 1991 Feb;29(2):104-14.

5 Weston CF, et al: Predicting Survival from Out-of-Hospital Cardiac Arrest: A Multivariate Analysis. *Resuscitation* 1997 Feb;34(1):27-34.

6 De Maio VJ et al: Optimal Defibrillation Response Intervals for Maximum Out-of-Hospital Cardiac Arrest S. *Ann Emerg Med* 2003 Aug;42:2:242-250.

7 Vaillancourt C, et al, Canadian Cardiovascular Outcomes Research Team Optimal Defibrillation Response Intervals for Maximum Out-of-Hospital Cardiac Arrest Survival Rates. *Ann Emerg Med* 2003 Aug;42:2:242-250.

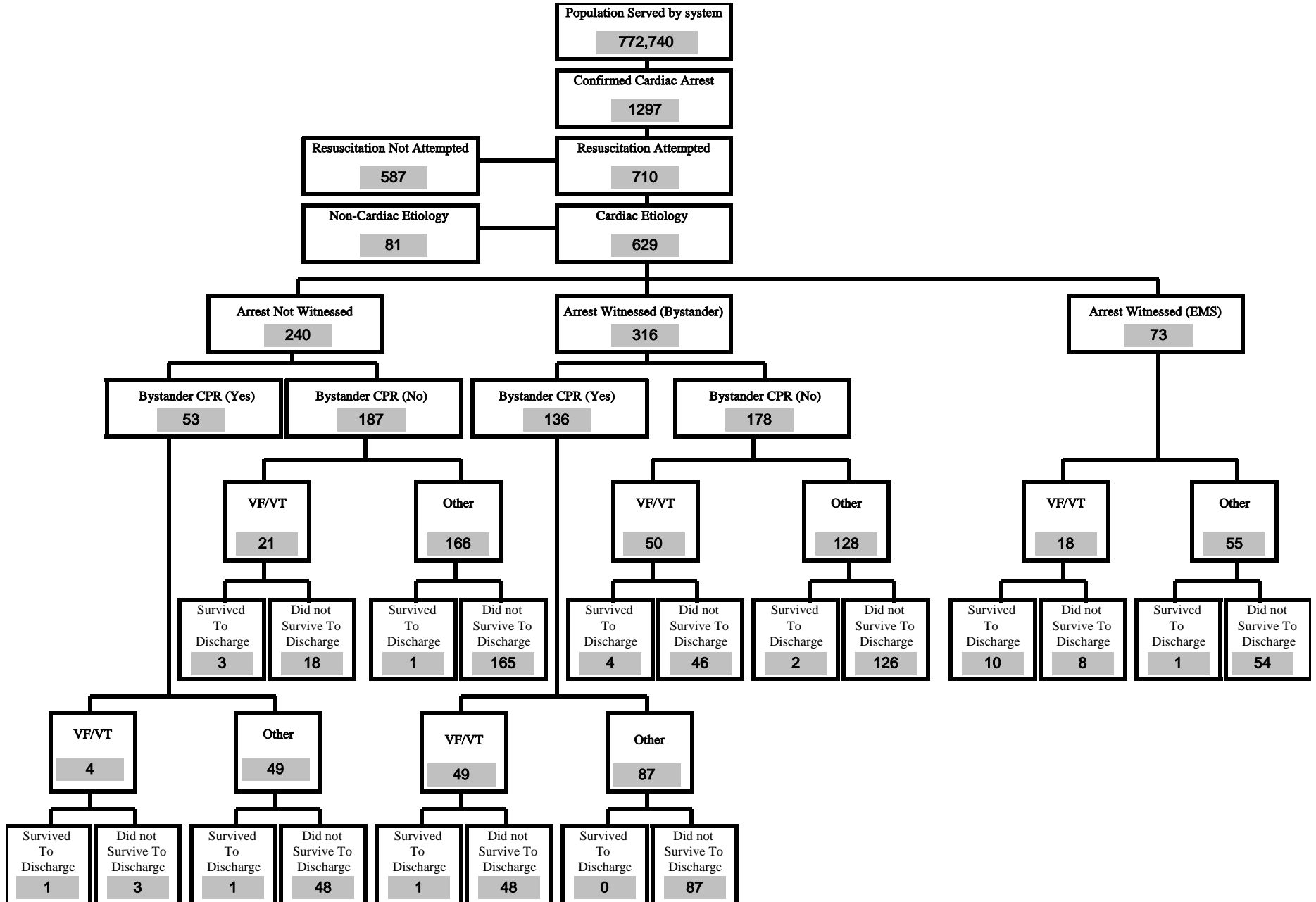
Utstein Style Report

In 1991, the recommended guidelines for uniform reports of data for Out of Hospital Cardiac Arrest: the Utstein Style were published in the Annals of Emergency Medicine. In response to the lack of uniform terminology and reporting standards for Out Of Hospital Cardiac Arrests, a consensus was developed on a glossary of terms, a template for reporting data (next page), definitions for time points and intervals, definitions of clinical terms and outcomes as well as recommendations for the description of EMS systems when reporting Out Of Hospital Cardiac Arrest research.

In reporting our provincial Out Of Hospital Cardiac Arrest data and outcomes we have attempted to follow the Utstein style.

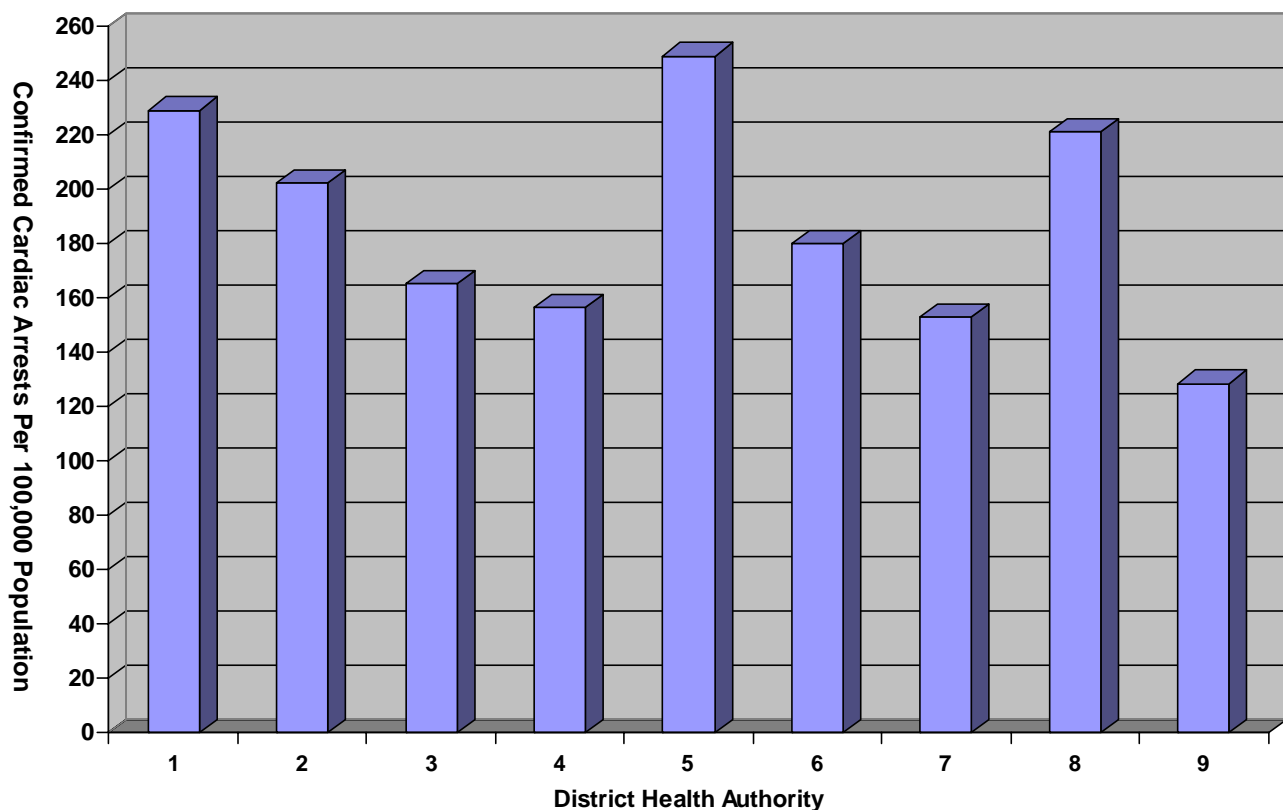
Utstein Style Report

Provincial Summary Year to Date 12/31/04



Cardiac Arrests with Resuscitation Attempted per 100,000

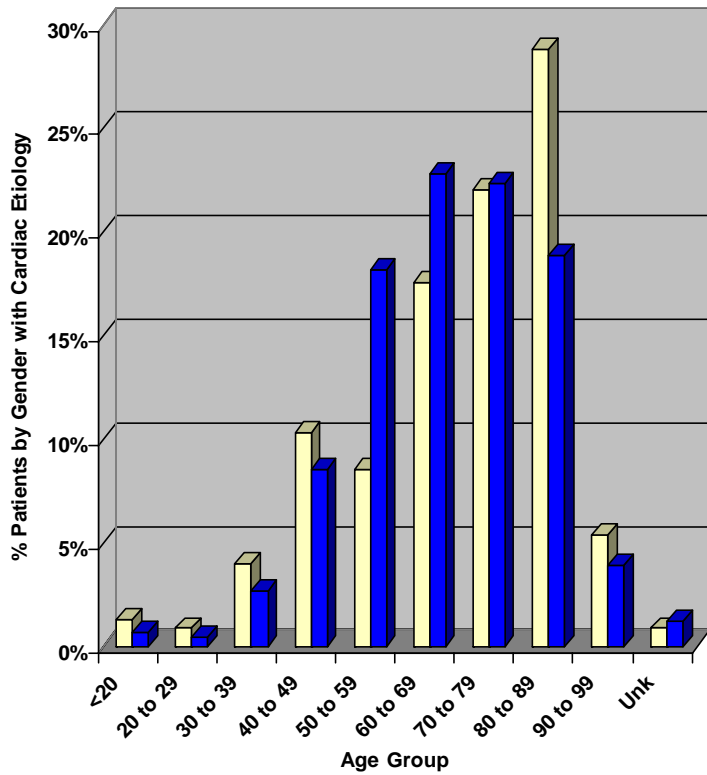
Year to Date 12/31/04



DHA	Cardiac Arrests	Adult Population	Cardiac Arrests Per 100,000
1	118	51465	229.3
2	107	52876	202.4
3	117	70777	165.3
4	93	59425	156.5
5	68	27295	249.1
6	73	40585	179.9
7	61	39927	152.8
8	240	108565	221.1
9	420	326877	128.5
Province	1297	777792	166.8

Age & Gender of Patients with Resuscitation Attempted

Year to Date 12/31/04



INTERPRETATION:

Approximately 2/3 of cardiac arrests were in males and 1/3 in females. The most common decade for males to have an arrest is in their 60's, for females it was in their 80's.

BENCHMARKS:

This data is very similar to our system last year and to 5 EMS systems in Canada reported by Dr. Vaillancourt.*

LIMITATIONS:

There were a small number of cases where the age was unreported or unknown.

*Vaillancourt C, Stiell IG, Canadian Cardiovascular Outcomes Research Team. Can J Cardiol 2004 Sep;20(11):1081-90.

Age	<20	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100+	Unknown	Total
Male	3 (0.7%)	2 (0.5%)	11 (2.7%)	35 (8.6%)	74 (18.2%)	93 (22.9%)	91 (22.4%)	77 (18.9%)	16 (3.9%)	0 (0%)	5 (1.2%)	407 (64.7%)
Female	3 (1.4%)	2 (0.9%)	9 (4.1%)	23 (10.4%)	19 (8.6%)	39 (17.6%)	49 (22.1%)	64 (28.8%)	12 (5.4%)	0 (0%)	2 (0.9%)	222 (35.3%)
Total	6 (1.0%)	4 (0.6%)	20 (3.2%)	58 (9.2%)	93 (14.8%)	132 (21.0%)	140 (22.3%)	141 (22.4%)	28 (4.5%)	0 (0%)	7 (1.1%)	629

Locations

Year to Date 12/31/04

Location	Arrests	% of Total (1297)
Home/Cottage	1022	78.8%
Highway	69	5.3%
Other	45	3.5%
Nursing Home	43	3.3%
Public Street	36	2.8%
Hockey	19	1.5%
Public Building	16	1.2%
Hospital	10	0.8%
Industrial	8	0.6%
Ambulance/Helicopter Landing Zone	7	0.5%
Recreational Facility	6	0.5%
Drs Office	3	0.2%
Group Home	3	0.2%
School/Day Care	3	0.2%
Church	2	0.2%
Casino	1	0.1%
Farm	1	0.1%
Golf Course	1	0.1%
Penitentiary	1	0.1%
Unknown	1	0.1%
Total	1297	100%

INTERPRETATION:

By far the most common place of a cardiac arrest is in a private home or cottage. This may limit the success of public access defibrillation strategies. A significant number of arrests occurred at hockey rinks.

BENCHMARKS:

Our system has ranged between 73% and 80% private home/cottage over the past 6 years. Similar studies have shown similar results in other systems.*

LIMITATIONS:

"Other" still represents the 3rd most common location but these are not high density public places.

*Vaillancourt C, Stiell IG, Canadian Cardiovascular Outcomes Research Team. Can J Cardiol 2004 Sep;20(11):1081-90.

Survivor Rates

Year to Date 12/31/04

Total Patients Recorded	1297
Resuscitations Attempted	710
Cardiac Etiology	629
Median Response Interval (min)	7
Survived to Discharge (% Cardiac Etiology)	24 (3.8%)

SUB GROUPS	#	Survivors
Bystander Witnessed Arrests	316	7 (2.2%)
EMS Witnessed Arrests	73	11 (15.1%)
All Witnessed Arrests	389	18 (4.6%)
Bystander CPR	189	3 (1.6%)
Initial Rhythm - Asystole or PEA	487	5 (1.9%)
- VF/VT	142	19 (13.3%)
Bystander Witnessed & Bystander CPR	136	1 (0.7%)
Bystander Witnessed & Bystander CPR & VF/VT	49	1 (2.0%)
Bystander Witnessed & Bystander CPR & VF/VT & Call Response Interval <9min	32	1 (3.1%)

INTERPRETATION:

Overall survival to discharge was 3.8%. Survivors were more likely to have an initial rhythm of VF/VT and to have been witnessed. We did not show a benefit to bystander CPR. In the subgroup analysis the denominators (#) are taken from the Utstein Style Report on page 2.

BENCHMARKS:

The survivor rate in OPALS (a large Ontario cardiac arrest survival study) was 5.1%. * Our rates have ranged from 2.7% to 6.9% over the past 7 years.

LIMITATIONS:

Because of the small number of survivors a lack of benefit from bystander CPR is likely a statistical anomaly as multiple other studies have shown a benefit to bystander CPR.

*Stiell IG, Well GA, Field B, Spaite DW, Nesbitt LP, DeMaio VJ, Nichol G, Cousineau D, Blackburn J, Munkley D, Luinstra-Toohey L, Campeau T, Dagnone E, Lyver M, Advanced Cardiac Life Support in Out-of-Hospital Cardiac Arrest, N Engl J Med 2004; 351:647-56.

Public vs Private

Year to Date 12/31/04

	Public	Private	Total
Total Patients Recorded	229	1068	1297
Resuscitations Attempted	139 (60.7%)	571 (53.5%)	710 (54.7%)
Cardiac Etiology	106 (46.3%)	523 (49.0%)	629 (48.5%)
Median Call to Arrive Scene (min)	7	7	7

n (%) Patients Cardiac Etiology

Arrest Witnessed	76 (71.7%)	313 (59.8%)	389 (61.8%)
Bystander CPR	43 (46.7%)	148 (28.3%)	191 (34.4%)
Initial Rhythm -Asystole	62 (58.5%)	299 (57.2%)	361 (57.4%)
-PEA	8 (7.5%)	117 (22.4%)	125 (19.9%)
-VF/VT	36 (34.0%)	107 (20.5%)	143 (22.7%)
Survived to Discharge	9 (8.5%)	14 (2.7%)	23 (3.7%)

INTERPRETATION:

Interestingly, a cardiac arrest in a public place is twice as likely to receive bystander CPR and three times more likely to survive (8.4% vs 2.9%) despite similar response times (7 minutes mean). This is likely due to the higher proportion in VF/VT but may also reflect more comorbidities and higher ages in private home type arrests. It does suggest there is an opportunity for families of potential cardiac patients to learn CPR. The numbers in the above table differ by 1-2 from the Utstein Style Report. We were unable to discern why.

BENCHMARKS: Again these numbers are quite comparable to Vaillancourt's review.*

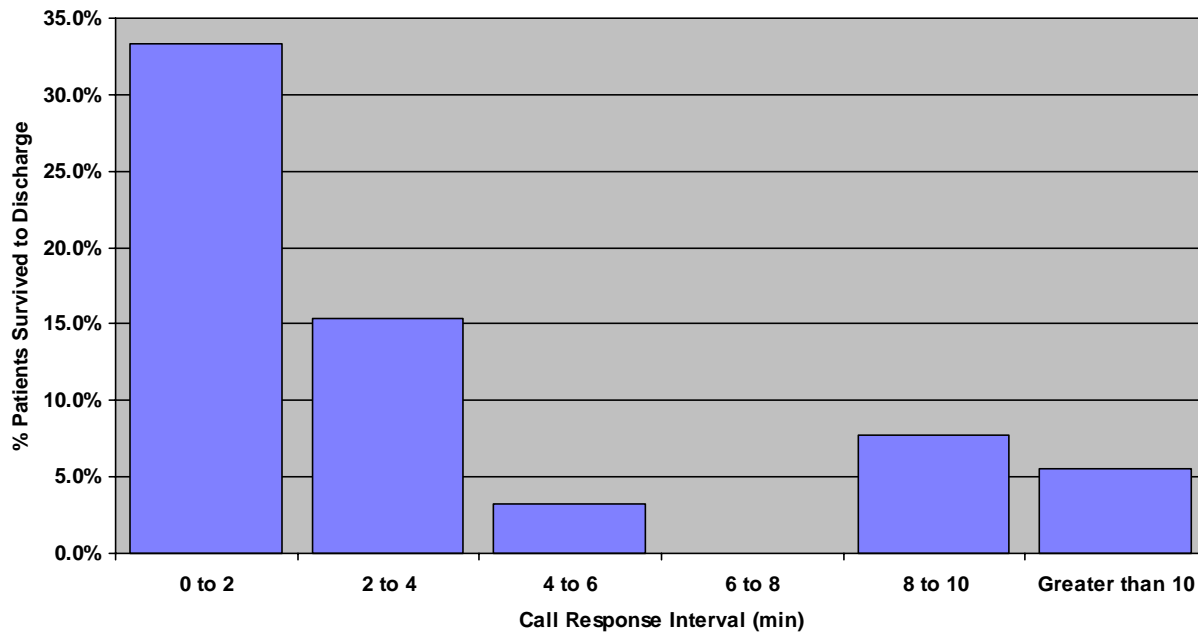
LIMITATIONS:

Small absolute numbers of survivors makes it difficult to assume a real association versus a statistical anomaly.

*Vaillancourt C, Steill IG, Canadian Cardiovascular Outcomes Research Team. Can J Cardiol 2004 Sep;20(11):1081-90

Call Response Interval for Presenting Rhythm of VF/VT, Non-EMS Witnessed

Year to Date 12/31/04



0 to 2 min Survived to Discharge	2 to 4 min Survived to Discharge	4 to 6 min Survived to Discharge	6 to 8 min Survived to Discharge	8 to 10 min Survived to Discharge	>10 min Survived to Discharge
2 of 6 (33.3%)	4 of 26 (15.4%)	1 of 31 (3.2%)	0 of 16 (0.0%)	1 of 13 (7.7%)	1 of 18 (5.6%)

INTERPRETATION:

The likelihood of survival is increased by reducing the call to first defibrillation time.

BENCHMARKS:

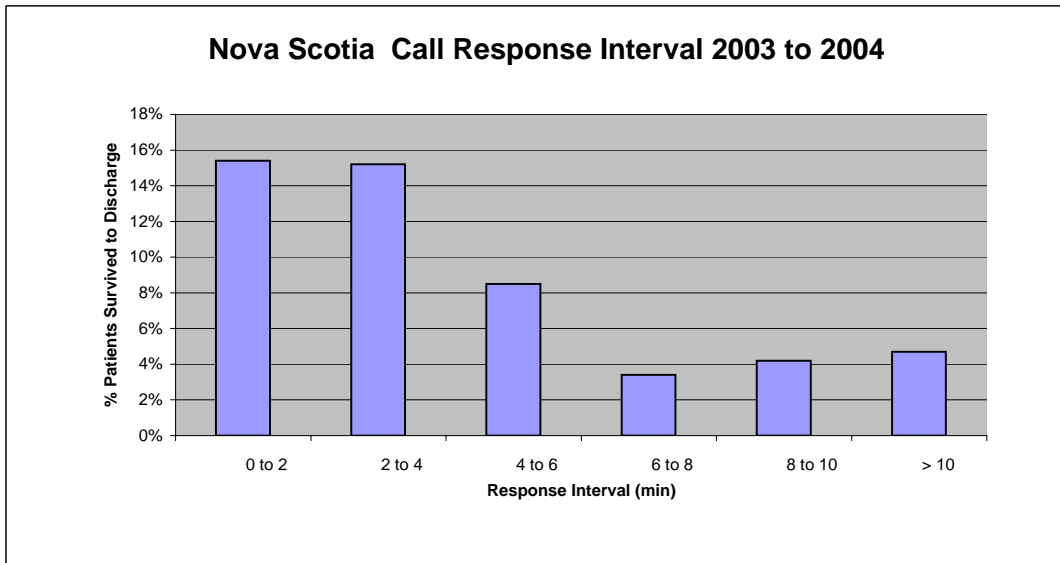
This has been shown in other studies. Please see the graph from DeMaio.*

LIMITATIONS:

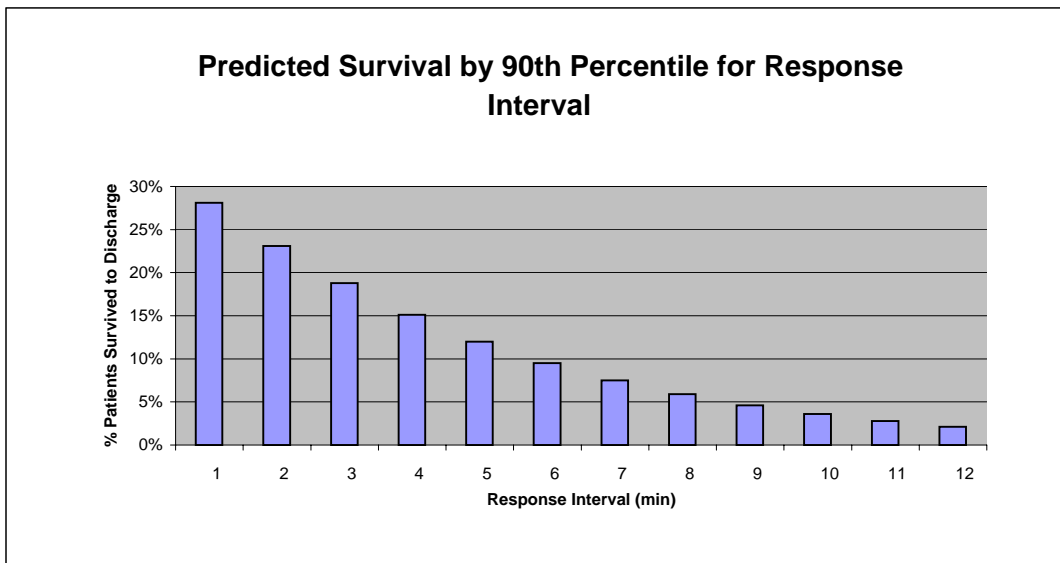
Exact time from call to first shock is not reliably recorded, therefore we have used a call response interval as a reasonable surrogate. DeMaio reports as defibrillation response interval.

*DeMaio VJ, Stiell JG, Well GA, Spaite DW. Optimal Defibrillation Response Intervals for Maximum Out-of-Hospital Cardiac Arrest Survival Rates, Ann Emerg Med. 2003;42:242-250.

Call Response Interval for Presenting Rhythm of VF/VT, Non-EMS Witnessed



% Survived to Discharge by Minute						
(min)	0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10
2003 to 2004	15.4%	15.2%	8.5%	3.4%	4.2%	4.7%



% Survived to Discharge by Minute												
(min)	1	2	3	4	5	6	7	8	9	10	11	12
1991 to 1997	28.1%	23.1%	18.8%	15.1%	12.0%	9.5%	7.5%	5.9%	4.6%	3.6%	2.8%	2.1%

DeMaio VJ, Stiell JG, Well GA, Spaite DW. Optimal Defibrillation Response Intervals for Maximum Out-of-hospital Cardiac Arrest Survival Rates, *AnnEmerg Med* 2003; 2:242-250.

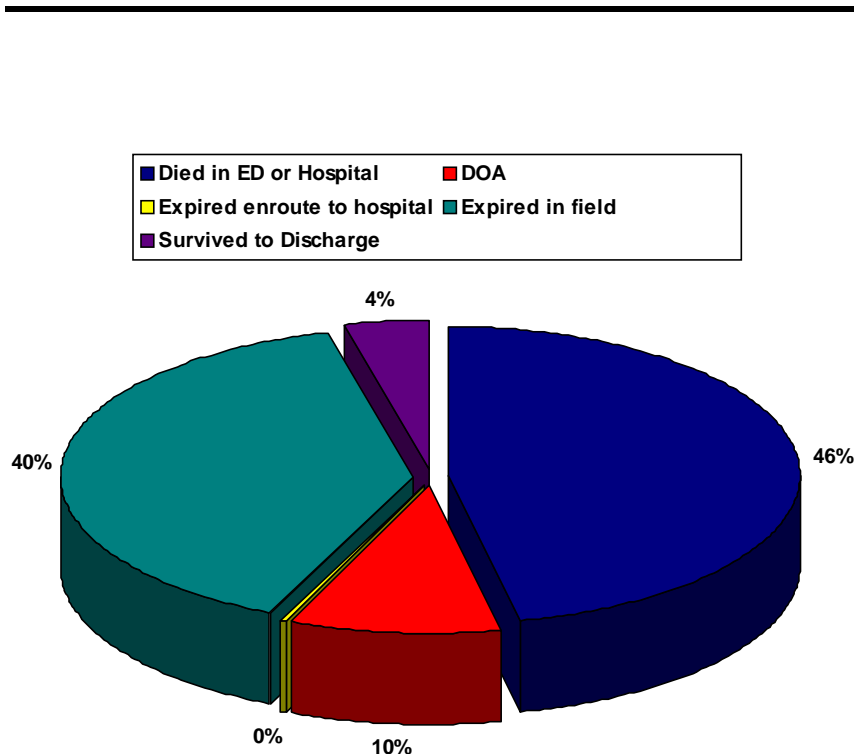
Outcomes

Year to Date 12/31/04

Total Patients: 1297

Resuscitation Attempted: 710

Cardiac Etiology: 629



INTERPRETION:

The majority of cardiac arrest patients were declared dead either on route to or after they arrived at the hospital. 40% were declared dead in the field after an appropriate period of ACLS resuscitative efforts as per protocol. 10% were determined to meet the provincial medical examiner's definition of death and no resuscitative efforts were attempted (DOA).

BENCHMARKS:

These proportions are very similar to those found in other studies and reviewed in the NAEMSP position paper on field termination.*

LIMITATIONS:

Forty % "Died in ED or Hospital" does not necessarily infer a return of spontaneous circulation. A proportion of this 40% were transported without ROSC and declared in the ED.

*Bailey ED, Wydor GC, Cone DC, Termination of Resuscitation in the Prehospital Setting for Adult Patients Suffering Nontraumatic Cardiac Arrest. National Association of EMS Physicians Standards and Clinical Practice Committee, PreHosp Emerg Care 2000 Apr-Jun, 4(2):190-5.

Cardiac Arrest Report by DHA

Year to Date 12/31/04

DHA	Total Out of Hospital Cardiac Arrest	Resuscitation Attempted	Cardiac Etiology	Arrest Witnessed	Bystander CPR	Shockable Rhythm VFVT	Asystole	PEA	Survival to Discharge
1	118	66	56	30 (53.6%)	13 (26.5%)	12 (21.4%)	33 (58.9%)	11 (19.6%)	3 (5.4%)
2	107	58	52	37 (71.2%)	15 (32.6%)	16 (30.8%)	28 (53.8%)	8 (15.4%)	1 (1.9%)
3	117	74	68	36 (52.9%)	25 (41.7%)	19 (27.9%)	37 (54.4%)	12 (17.6%)	3 (4.4%)
4	93	52	44	29 (65.9%)	12 (31.6%)	10 (22.7%)	25 (56.8%)	9 (20.5%)	0
5	68	34	31	15 (48.4%)	12 (40.0%)	5 (16.1%)	22 (71.0%)	4 (12.9%)	1 (3.2%)
6	73	38	31	19 (61.3%)	8 (36.4%)	5 (16.1%)	17 (54.8%)	9 (29.0%)	4 (12.9%)
7	61	33	28	21 (75.0%)	12 (48.0%)	6 (21.4%)	17 (60.7%)	5 (17.9%)	1 (3.6%)
8	240	132	116	71 (61.2%)	36 (34.3%)	26 (22.4%)	70 (60.3%)	20 (17.2%)	3 (2.6%)
9	420	223	203	131 (64.5%)	58 (32.0%)	43 (21.2%)	113 (55.7%)	47 (23.2%)	8 (3.9%)
NS	1297	710	629	389 (61.8%)	191 (34.4%)	142 (22.6%)	362 (57.6%)	125 (19.9%)	24 (3.8%)

MOP Cardiac Arrest Statistics

Year to Date 12/31/04

MOP	Cardiac Etiology	% Arrest Witnessed	% Bystander CPR	% Initial Rhythm VF/VT	Median (Minutes)		Survived to Discharge	% Survived to Discharge
					Call Response Interval	Call Shock Interval *		
Bennett	20	80.0%	52.9%	20.0%	10	8	1	5.0%
Buchholz	39	48.7%	50.0%	28.2%	9	3	1	2.6%
Buffett	5	60.0%	50.0%		18.5		0	0.0%
Chaloner	11	63.6%	10.0%	27.3%	10.5	32	0	0.0%
Dow	14	71.4%	50.0%	28.6%	10	10.5	0	0.0%
Holmes	5	60.0%	40.0%	20.0%	9	4	0	0.0%
Howlett	44	65.9%	31.6%	22.7%	10	19	0	0.0%
Legere	19	68.4%	29.4%	26.3%	8	11.5	1	5.3%
Loveridge	3	100.0%	33.3%	66.7%	6	24	0	0.0%
MacDonald	11	63.6%	30.0%	18.2%	11.5	9.5	2	18.2%
McLennan	31	48.4%	40.0%	16.1%	8	4	1	3.2%
McLeod	46	67.4%	33.3%	28.3%	8	5	1	2.2%
Morash	76	53.9%	27.9%	21.1%	7	3	3	3.9%
Sutherland	15	73.3%	50.0%	33.3%	12	3	1	6.7%
Sutton	31	61.3%	36.4%	19.4%	6	5	4	12.9%
Travers	162	64.2%	31.7%	21.0%	6	5	6	3.7%
Wawer	97	59.8%	31.8%	22.7%	5	13	2	2.1%
Summary	629	61.8%	34.4%	22.7%	7	6	23	3.7%

* Filtered on resuscitation attempted / cardiac etiology / initial rhythm- VF/VT prior to hospital transport. There is concern about the accuracy of this measurement as the time of first shock is not always taken from a time piece synchronized with the CAD which marks arrival at scene. Blank spaces mean no patients were defibrillated.

Provincial Comparison of 1998 - 2004 Cardiac Arrest Statistics

Year	Resuscitation Attempted	Cardiac Etiology	Arrest Witnessed	Bystander CPR	VF/VT	Survived to Discharge
1998	492	438 (89.0%)	207 (47.3%)	139 (31.7%)	128 (29.2%)	12 (2.7%)
1999	558	495 (88.7%)	270 (54.5%)	176 (35.6%)	159 (32.1%)	27 (5.5%)
2000	574	506 (88.2%)	274 (54.2%)	177 (35.0%)	165 (32.6%)	35 (6.9%)
2001	697	591 (84.8%)	293 (49.6%)	210 (35.5%)	158 (26.7%)	31 (5.2%)
2002	589	476 (80.8%)	260 (54.6%)	152 (31.9%)	135 (28.4%)	30 (6.3%)
2003	690	580 (84.1%)	339 (58.4%)	191 (37.5%)	140 (24.1%)	21 (3.6%)
2004	710	629 (88.6%)	389 (61.8%)	188 (33.8%)	142 (22.6%)	24 (3.8%)

INTERPRETATION:

There has been a steady increase in the total number of cardiac arrests seen in our system. Interestingly, there has been a steady decrease in those with an initial rhythm of VF/VT (those most likely to respond to treatment). This may explain the decrease in survival rate over the last 2 years. Perhaps this trend (if it is real) may be explained by an aging population with more comorbidities having cardiac arrests. This phenomenon requires more study. Bystander CPR rates have remained stable but could be improved.

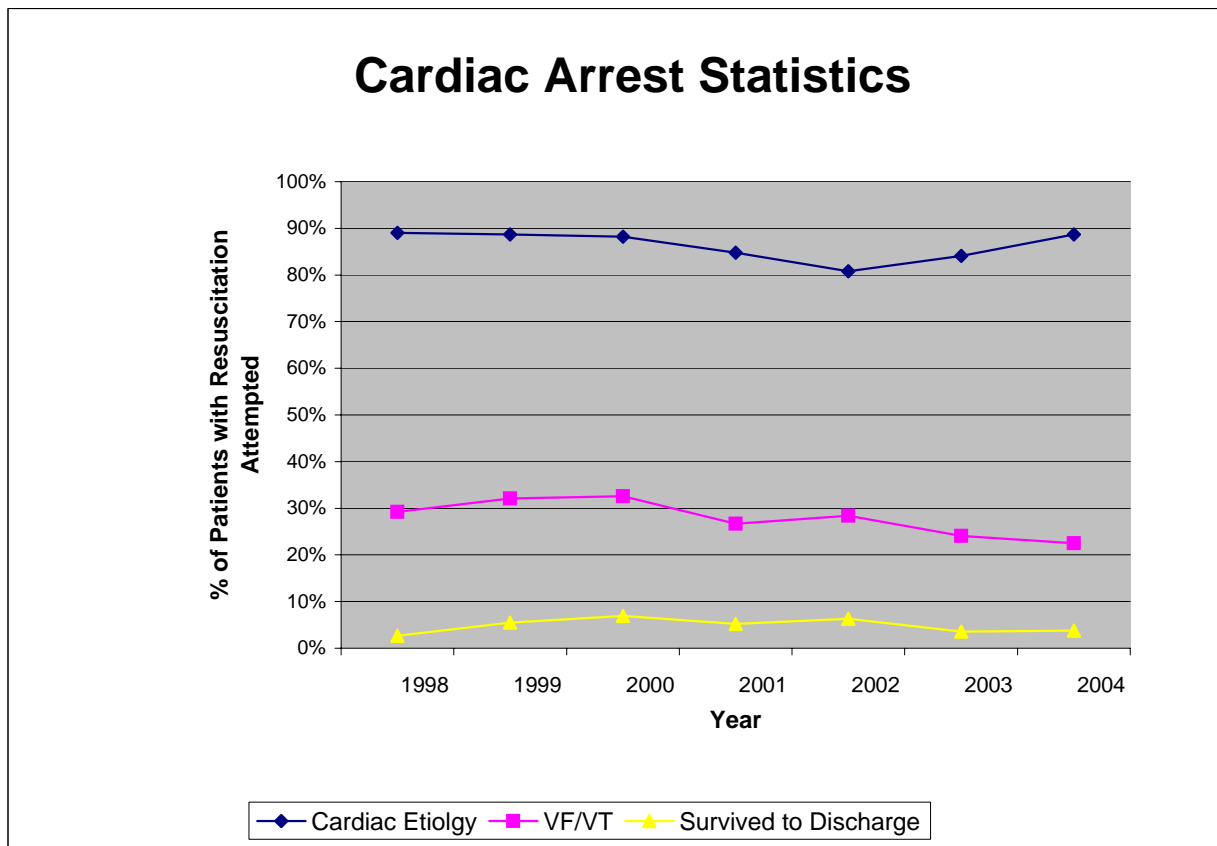
BENCHMARKS:

OPALS Survival 5.1%

LIMITATIONS:

OPALS benchmark has a 90% fractile response interval of 8 minutes (response interval less than 8 minutes, 90% of the time). Our data includes many cardiac arrests in rural areas where response times are much more difficult to maintain. Our survival rate in cardiac arrests with response interval under 8 minutes was .

Provincial Comparison of 1998 - 2004 Cardiac Arrest Statistics



Year	Cardiac Etiology	VF/VT	Survived to Discharge
1998	89.0%	29.2%	2.7%
1999	88.7%	32.1%	5.5%
2000	88.2%	32.6%	6.9%
2001	84.8%	26.7%	5.2%
2002	80.8%	28.4%	6.3%
2003	84.1%	24.1%	3.6%
2004	88.7%	22.5%	3.8%

Survivors

Once a patient is discharged, (s)he is sent a letter stating that we are doing follow up on all patients who suffered an out of hospital cardiac arrest and were discharged from hospital. The letter states a paramedic will be contacting them to conduct a phone or in-person interview. We emphasize this is purely voluntary and that no change in their management will result from participating or not participating in the interview.

Cerebral Performance Category Scale	
1	Good
2	Mild Disability
3	Moderate Disability
4	Severe Disability
5	Coma/vegetative state

2003 (21)		2004 (24)	
CPC	# (%)	CPC	# (%)
1	20	1	13
2	1	2	5
3	-	3	1
4	-	4	-
5	-	5	-
?	-	?	5

A score of 1 or 2 is considered good outcome. Combining the 2003 and 2004 data shows that 39/40 (97.5%) patients who could be interviewed had a 1 or 2 rating. If we include the patients that could not be reached then the percentage becomes 39/45 (87%).

Definitions

Adult: Any patient 16 years of age or older.

Asystole: The cessation of all electrical activity in the heart.

Arrest Witnessed (EMS): Patient arrested after arrival of emergency response personnel. Utstein studies report 10% of out-of-hospital cardiac arrest occur after the arrival of emergency personnel.

Bystander CPR : *(also called Lay or Citizen CPR)* An attempt to perform basic cardiopulmonary resuscitation on a cardiac arrest patient by a person who is not a member of the organized emergency response system. By this definition a physician, nurse or paramedic who witnesses a cardiac arrest and provides CPR is classified as a bystander.

Call Response Interval: The period of time from the moment the call for help is answered at the Ambulance Communication Centre to the moment the paramedics arrive at scene. Also referred to as call received/receipt until at scene interval. Note that this interval does not extend to arrival at the patient's side.

Call Shock Interval: The period of time from the moment the call for help is answered at the Ambulance Communication Center to the time the first defibrillation (shock) is given.

Cardiac Arrest: The cessation of the heart's mechanical activity with loss of vital signs (no detectable pulse, breathing and unresponsive).

Cardiac Etiology: It is impossible to accurately determine the specific cause of cardiac arrest for all attempted resuscitation. According to the Utstein Style Template we classify cardiac arrest as presumed cardiac etiology if it is likely based on all available information - history, past medical history, presenting rhythm, hospital, autopsy and Medical Examiner (ME) records. However, this frequently is a diagnosis of exclusion as patients who do not fit readily into the non cardiac etiology category are included in the cardiac etiology category.

Cardiopulmonary Resuscitation (CPR): Broad term meaning an attempt to restore spontaneous circulation. This term refers to basic CPR which is the attempt to restore effective circulation with external compressions of the chest wall, plus expired air inflation or the lungs.

Definitions

Cerebral Performance Category: This is a five point scale used to assess neurological status of survivors from out of hospital cardiac arrest. Category 1 is conscious and normal, without disability. Category 2 is conscious with moderate disability. Category 3 is conscious with severe disability. Category 4 is a comatose or vegetative state. Category 5 is death. Our system uses a single data collection form but many interviewers to collect this data.

Computer Aided Dispatch (CAD): In Nova Scotia, all calls for an ambulance are transferred from a 911 Public Service Answering Point (PSAP) to a single Ambulance Communications Centre and automatically assigned a master incident number (MIN) and time stamped. A computer program guides the call taker through a series of questions and then suggests a response configuration (closest ambulance - no lights and siren, with lights and siren, second ambulance to intercept and/or assist the first, medical first responders as well as the ambulance(s), etc.)

Dead on Arrival (DOA): A patient who was pronounced dead upon the arrival of paramedics. There was no attempt at resuscitation.

Medical Oversight Physician (MOP): Physician responsible for a specific area in Nova Scotia who oversees the care provided to persons using the ambulance service according to provincial emergency medical policies and protocols.

Noncardiac Etiology: Noncardiac causes of cardiac arrest are often obvious and easy to determine. Specific subcategories include drug overdose, suicide, drowning, hypoxia, exsanguination, cerebrovascular accident, and trauma.

On Line Medical Oversight Physician (OLMOP): Physician who provides on-line medical oversight consultation 24/7 for ground ambulance paramedics providing care to persons using the ambulance service according to provincial emergency medical policies and protocols.

Population at Risk: The provincial population over the age of fifteen (15) years.

Private Residence: Home/Cottage.

Public Access Defibrillation: The provision of defibrillation by non-traditional "first responders" such as security guards, lifeguards, flight attendants, etc.

Public Place: Ambulance/Helicopter Landing Zone, Bar, Casino, Church, Doctors Office, Farm, Golf Course, Group Home, Highway, Hockey Arena, Hospital, Industrial Complex, Nursing Home, Penitentiary, Public Building, Public Street, Recreational Facility, School/Day Care and Ski Hill.

Definitions

Pulseless Electrical Activity: An organized cardiac rhythm but there is no pulse/cardiac output

Resuscitations Attempted: This group includes all persons whom emergency system personnel attempted to resuscitate (other than basic assessment). A resuscitation attempt refers to some effort at basic CPR.

Resuscitation Not Attempted: Resuscitation attempts for some patients in cardiac arrest are inappropriate and should not be attempted. The current EHS policy is that if a patient has evidence of being dead for a period of time where resuscitation attempts would have no hope of success the paramedics do not attempt resuscitation. Additionally, resuscitation is not attempted on patients with a Do Not Resuscitate (DNR) order. Also, if the interval from patient collapse until arrival of the paramedics at the scene is confirmed to be greater than fifteen (15) minutes, no CPR has been performed prior to their arrival and, the defibrillator reveals asystole or gives a no shock advisory, resuscitation may not be attempted.

Survival: Out-of-hospital cardiac arrest patient successfully resuscitated and subsequently discharged alive from hospital.

Survival Rate: The number of survivors to hospital discharge divided by the number of people who suffer an out-of-hospital cardiac arrest of cardiac origin and have resuscitation attempted.

Utstein Style: Internationally agreed upon criteria and definitions for reporting out-of-hospital cardiac arrest data and outcomes.

Ventricular Fibrillation / pulseless Ventricular Tachycardia (VF/VT): A totally disorganized / extremely fast, ineffective electrical activity in the heart resulting in no cardiac output.

Witnessed Arrest: Patient collapse was seen or heard by a bystander.