

Regional Paramedic Program for Eastern Ontario

OUT-OF-HOSPITAL CARDIAC ARREST REPORT 2015

Ottawa Paramedic Service



Table of Contents

GLOSSARY	3
CHARACTERISTICS OF ALL OUT-OF-HOSPITAL CARDIAC ARRESTS	5
ADULT MEDICAL CARDIAC ARRESTS TABLES	6
Characteristics	6
Interventions	7
Outcomes	8
Destination Hospital & Survival	9
5 YEAR COMPARISON FIGURES	10
Survival to Discharge	10
Return of Spontaneous Circulation (ROSC)	11
Return of Spontaneous Circulation & Bystander CPR across RPPEO	12
Bystander CPR and Public Access Defibrillator (PAD) Rates	12
TRAUMA TABLES	13
Characteristics	13
Interventions	14
Outcomes	15
Destination Hospital & Survival Status	16
PEDIATRIC MEDICAL TABLES	17
Characteristics	17
Interventions	17
Outcomes	19
Destination Hospital & Survival Status	20
MEDICAL NON-CARDIAC TABLE	21

GLOSSARY

BYSTANDER CPR: Bystander CPR is cardiopulmonary resuscitation performed by a person who is not responding as part of an organized emergency response system to a cardiac arrest. Firefighters, paramedics or police may be described as performing bystander CPR if they are not part of the formal emergency response system involved in the victim's resuscitation, for this case.

CARDIAC VSA:¹ An arrest is presumed to be of cardiac etiology unless it is known or likely to have been caused by trauma, submersion, drug overdose, asphyxia, exsanguination, or any other non-cardiac cause as best determined by rescuers (from Utstein definitions 2.6 Cause of arrest /etiology).

INITIAL ARREST RHYTHM: The first cardiac rhythm present when the monitor or defibrillator is attached to the patient after a cardiac arrest. If data is not available (E.g. from a fire department which does not submit defibrillator files, no strip provided by the ambulance service, public access defibrillators) then the rhythm is classified as either shockable or non-shockable based on the initial defibrillator's response.

MEDICAL NON-CARDIAC VSA:²

Anaphylaxis - Cases of sudden collapse with other clear signs of anaphylaxis including urticaria, facial and tongue swelling, respiratory distress, and clear exposure to an allergen.

Chemical poisoning - Chemical poisons are considered substances that would not normally be ingested, inhaled or consumed and may be environmental or industrial, including such items as insecticides, herbicides, industrial gases, cleaning solutions, carbon monoxide sources.

Drowning - Victim is found by provider or bystanders submersed in water or witnessed to be choking or coughing before going under water.

Drug poisoning/overdose - Intentional or unintentional, includes prescribed or over the counter medications, recreational drugs, and ethanol (alcohol).

Excessive cold - Low ambient temperature (below 40F or 0C) where an obviously healthy individual is inappropriately clothed for the ambient temperature.

Foreign body obstruction - Sudden airway obstruction due to ingestion of a foreign body identified by history or by direct visualization within the airway. Some of these cases may be preceded by choking.

Hanging - Cases of sudden airway obstruction secondary to hanging. Patient may have a ligature present around the neck, be found hanging, or have marks on the neck compatible with a previous ligature.

Mechanical suffocation - Includes suffocation due to an external physical barrier and may include someone with a plastic bag over the head; pillow or another object used to suffocate the patient.

Strangulation - Strangulation is a form of asphyxia (though not categorized as 'contributing factor' asphyxia) characterized by closure of the blood vessels or air passages of the neck as a result of external pressure on the neck.

Sudden Infant Death Syndrome (SIDS) - Cases of death where an infant, ages 1 month to 12 months is found in their crib/bed and death was unwitnessed. All three criteria - age, crib/bed location, and unwitnessed death—must be present to be categorized as SIDS.

LOCATIONS:²

Public - Includes airport, arena, campground, church, community centre, construction site, factory, gas station, golf course, gym facilities, hotel, office, lake, mall/store, park, restaurant, school, street, and trails.

Home Residence - Includes inside or immediately surrounding the apartment, home, mobile home, farmhouse, garage, yard and garden. Also includes group home and shelters for the homeless.

Residential institution - Includes assisted living, nursing home, jail and prison.

Healthcare facility includes hospital, rehabilitation hospital and medical clinic.

OBVIOUSLY DEAD PATIENT: A patient who meets the criteria for obvious death as per BLS PCS standards i.e. decapitation, transection, visible decomposition, putrefaction or otherwise (grossly charred body; open head or torso wounds with gross outpouring of cranial or visceral contents; gross rigor mortis). No resuscitation would be attempted on this patient.

ROSC IN FIELD: Return of spontaneous circulation that occurs either, on scene prior to transport or during paramedic transport to destination hospital (en route).

SURVIVED TO HOSPITAL ADMISSION: Patient had been VSA at some point but had been resuscitated prior to arriving or after arriving at ER. They were admitted but died in hospital prior to being discharged.

SURVIVED TO DISCHARGE: Patient had been VSA at some point but had been resuscitated prior to or after arriving at ER. Patient was admitted and subsequently discharged alive from the hospital.

TERMINATION OF RESUSCITATION (TOR): At some point in a resuscitation attempt the paramedic has patched to a Base Hospital Physician requesting that the attempt be discontinued. Efforts to resuscitate are stopped prior to arrival at hospital. The patient is usually not transported to hospital.

TERTIARY CENTRES: Children's Hospital for Eastern Ontario; Kingston General Hospital; Ottawa Heart Institute; The Ottawa Hospital – Civic Campus; The Ottawa Hospital – General Campus

TRAUMA: Cause of arrest is documented as being a result of blunt or penetrating trauma.

UTSTEIN COMPARATOR GROUP: Medical arrest cardiac in origin was witnessed by a bystander and initial rhythm was Ventricular Fibrillation or Ventricular Tachycardia.

VALID MOH DNR: Valid serial numbered Do Not Resuscitate form issued by the Ministry of Health which reflects a patient's and/or family's desire for no resuscitation to be attempted in the event of death

VERBAL DNR: In the absence of a Valid MOH DNR form a verbal DNR may be requested. Resuscitation is attempted but then discontinued when a Base Hospital Physician grants a cease resuscitation order.

WITNESSED ARREST: A witnessed cardiac arrest is one that is seen or heard by another person.

¹Cummins RO, Chamberlain DA, Abramson NS, Allen M, Baskett PJ, Becker L, Bossaert L, Deloos HH, Dick WF, Eisenberg MS, et al. Recommended guidelines for uniform reporting of data from out-of-hospital cardiac arrest: the Utstein Style. A statement for health professionals from a task force of the American Heart Association, the European Resuscitation Council, the Heart and Stroke Foundation of Canada, and the Australian Resuscitation Council. *Circulation*. 1991; 84: 960–975

²Appendix 2 Data elements, definitions and reference codes ROC Epistry-Cardiac 2007-06-25 edition

CHARACTERISTICS OF ALL OUT-OF-HOSPITAL CARDIAC ARRESTS

Table 1. Characteristics of ALL 966 out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

CHARACTERISTIC	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
Gender - males	615	(63.7)	(62.3 - 67.9)
Age, mean (SD) (mean age range), yrs	66.0	(18.6)	(65.1 – 68.9)
DISTRIBUTION OF AGE (YEARS) - (DNR, Obviously Dead, Resuscitation Attempted)			
Infants less than 1	6	(0.6)	(0.5 - 1.8)
Children 1-11	1	(0.1)	(0 - 1.4)
Adolescents 12-17	1	(0.1)	(0 - 1.4)
Adult 18-59	306	(31.7)	(23.1 - 32.5)
Senior 60+	650	(67.3)	(66.1 - 76.2)
Age not documented	2	(0.2)	(0 - 1.2)
SEASON			
Spring	254	(26.3)	(21.5 - 34.1)
Summer	218	(22.6)	(18.3 - 30.6)
Autumn	220	(22.8)	(18.5 - 27.7)
Winter	274	(28.4)	(23.1 - 34.3)
RESUSCITATION NOT ATTEMPTED			
DNR	84	(8.7)	(5.6 - 14)
Obviously Dead Patient	388	(40.2)	(29.1 – 44.5)
RESUSCITATION ATTEMPTED	494	(51.1)	(49.4 – 60.9)
ETIOLOGY (FOR RESUSCITATION ATTEMPTED ONLY)			
Medical - presumed Cardiac	432	(87.4)	(78 - 94.7)
Medical - presumed Non-Cardiac	35	(7.1)	(2.7 - 10.3)
Traumatic	27	(5.5)	(2.5 - 12)
RESPONSE TIMES (T4-T2 FOR RESUSCITATION ATTEMPTED ONLY)			
On scene within 8 minutes - n (%)	380	(76.9)	(38 - 76.9)
Response time, median (IQR) (median range), min	6.0	(4.0 – 8.0)	(6.0 – 10.0)

ADULT MEDICAL CARDIAC ARRESTS TABLES

Characteristics

Table 2. Characteristics of 431 paramedic treated **ADULT MEDICAL CARDIAC** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

CHARACTERISTIC	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
Gender - males	288	(66.8)	(62.9 - 72)
Age, mean (SD) (mean age range), yrs	68.5	(15.8)	(67.2 – 72.7)
DISTRIBUTION OF AGE (YEARS)			
Adult 18-59	120	(27.8)	(20.5 - 32.1)
Senior 60+	311	(72.2)	(67.9 - 79.5)
Age not documented	0	(0)	(0 - 0)
LOCATION			
Public	70	(16.2)	(7.2 - 19.8)
Home Residence	310	(71.9)	(71.9 - 84.3)
Residential Institution	45	(10.4)	(4.2 - 10.4)
Healthcare Facility	6	(1.4)	(0 - 2.6)
ARREST WITNESSED			
Arrest Witnessed	244	(56.6)	(44.9 - 61)
by Paramedic/Fire/Police	49	(11.4)	(7.7 - 16)
by Bystander	195	(45.2)	(36.1 - 52.9)
Arrest UNWITNESSED	187	(43.4)	(39 - 55.1)
BYSTANDER CPR			
Bystander CPR Performed	157	(36.4)	(30.9 - 50)
No bystander CPR	274	(63.6)	(50 - 69.1)
INITIAL ARREST RHYTHM			
VT/VF (Shockable)	110	(25.5)	(10.3 - 28.8)
Asystole/PEA (Non-Shockable)	321	(74.5)	(71.2 - 89.7)
APPLIED AED 1st			
Bystander AED	21	(4.9)	(0 - 6)
Police	18	(4.2)	(0 - 5.1)
Fire	85	(19.7)	(4.2 - 27)
Paramedic	307	(71.2)	(67 - 95.8)
AED not used	0	(0)	(0 - 0)

Interventions

Table 3. Interventions applied to 431 paramedic treated ADULT MEDICAL CARDIAC out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
ACP on scene	409	(94.9)	(1.5 - 94.9)
Autopulse used	65	(15.1)	(0 - 15.1)
AIRWAY INTERVENTIONS			
Advanced Airway NOT Attempted	143	(33.2)	(12.1 - 37.9)
Advanced Airway Attempted *	288	(66.8)	(62.1 - 87.9)
Advanced Airway Successful	237	(82.3)	(70.3 - 96.9)
<i>SGA attempted *</i>	159	(36.9)	(36.9 - 79)
-SGA successful	136	(85.5)	(64.6 - 93.3)
-SGA successful on 1st attempt	133	(83.6)	(64.6 - 90)
<i>ETT attempted *</i>	168	(39)	(0 - 39)
-ETT successful	106	(53)	(0 - 76.6)
-ETT successful on 1st attempt	89	(53)	(0 - 66)
BVM (after unsuccessful ETT &/or SGA attempt(s))	51	(11.8)	(2.6 - 23.5)
IV/IO ACCESS			
IV/IO NOT Attempted	30	(7)	(7 - 98.5)
<i>IV attempted *</i>	312	(72.4)	(1.5 - 72.4)
-IV successful	229	(73.4)	(0 - 100)
<i>IO attempted *</i>	184	(42.7)	(1.5 - 42.7)
-IO successful	179	(97.3)	(73.3 - 100)
<i>Only IO attempted (no IV attempted)</i>	89	(20.6)	(0 - 20.6)

* (n) value used as denominator to measure associated % successful

Outcomes

Table 4. Outcomes of 431 paramedic treated **ADULT MEDICAL CARDIAC** out-of-hospital cardiac arrest attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

OUTCOMES	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
OVERALL			
Termination of Resuscitation (TOR)	211	(49)	(41 - 59)
Transported	220	(51)	(41 - 59)
<i>Survived to hospital admission</i>	102	(23.7)	(9 - 25)
<i>Survived to discharge</i>	57	(13.2)	(2.6 - 16)
<i>Outcome unknown</i>	1	(0.2)	(0 - 1.3)
ROSC IN FIELD	152	(35.3)	(7.7 - 36)
ROSC prior to transport or TOR	152	(100)	(93.8 - 100)
ROSC en route to hospital	0	(0)	(0 - 6.3)
Termination of Resuscitation (TOR)	5	(3.3)	(0 - 6.3)
Transported	147	(96.7)	(93.8 - 100)
<i>Survived to hospital admission</i>	100	(65.8)	(53.6 - 81.8)
<i>Survived to discharge</i>	57	(37.5)	(19.4 - 75)
<i>Outcome unknown</i>	1	(0.7)	(0 - 0.7)
NO ROSC IN FIELD	279	(64.7)	(64 - 92.3)
Termination of Resuscitation (TOR)	206	(73.8)	(51.7 - 73.8)
Transported	73	(26.2)	(26.2 - 48.3)
<i>Survived to hospital admission</i>	2	(0.7)	(0 - 5.6)
<i>Survived to discharge</i>	0	(0)	(0 - 2.7)
<i>Outcome unknown</i>	0	(0)	(0 - 1.6)
Paramedic/Fire/Police Witnessed	49	(11.4)	(7.7 - 16)
Termination of Resuscitation (TOR)	7	(14.3)	(0 - 25)
Transported	42	(85.7)	(75 - 100)
<i>Survived to hospital admission</i>	14	(28.6)	(0 - 55.6)
<i>Survived to discharge</i>	12	(24.5)	(0 - 45.5)
<i>Outcome unknown</i>	1	(2)	(0 - 2)
Bystander Witnessed in VF/VT (Utstein)	84	(19.5)	(12.8 - 19.7)
Termination of Resuscitation (TOR)	5	(6)	(0 - 25)
Transported	79	(94)	(75 - 100)
<i>Survived to hospital admission</i>	60	(71.4)	(8.3 - 71.4)
<i>Survived to discharge</i>	42	(50)	(0 - 66.7)
<i>Outcome unknown</i>	0	(0)	(0 - 8.3)

Destination Hospital & Survival

Table 5. Destination hospital & survival status for 220 paramedic treated & transported **ADULT MEDICAL CARDIAC** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

DESTINATION HOSPITAL	Transported	% of Total transported	Survived to discharge	% Survived (of Transported)
Kemptville District	5	(2.3)	2	(40)
Montfort	37	(16.8)	7	(18.9)
The Ottawa Hospital - Civic Campus	54	(24.5)	17	(31.5)
The Ottawa Hospital - General Campus	49	(22.3)	10	(20.4)
Ottawa Heart Institute	8	(3.6)	8	(100)
Queensway Carleton	66	(30)	12	(18.2)
Winchester District Memorial	1	(0.5)	1	(100)
TOTAL	220		57	(25.9)
TERTIARY CENTRES (TC)				
Directly transported to TC	111	(50.5)	35	(15.9)
Directly transported to NON-TC	109	(49.5)	22	(10)
Initially transported to NON-TC & transferred to TC within 4 hrs	17	(15.6)	13	(11.9)*
Initially transported to NON-TC & transferred to TC (time unknown)	0	(0)	0	(0)*
Initially transported to NON-TC & NOT transferred to TC within 4 hrs	92	(84.4)	9	(8.3)*

* denominator used, n=Directly transported to NON-TC -Transported

5 YEAR COMPARISON FIGURES

Survival to Discharge

Figure 1a. Survival to discharge following cardiac arrest for Ottawa Paramedic Service

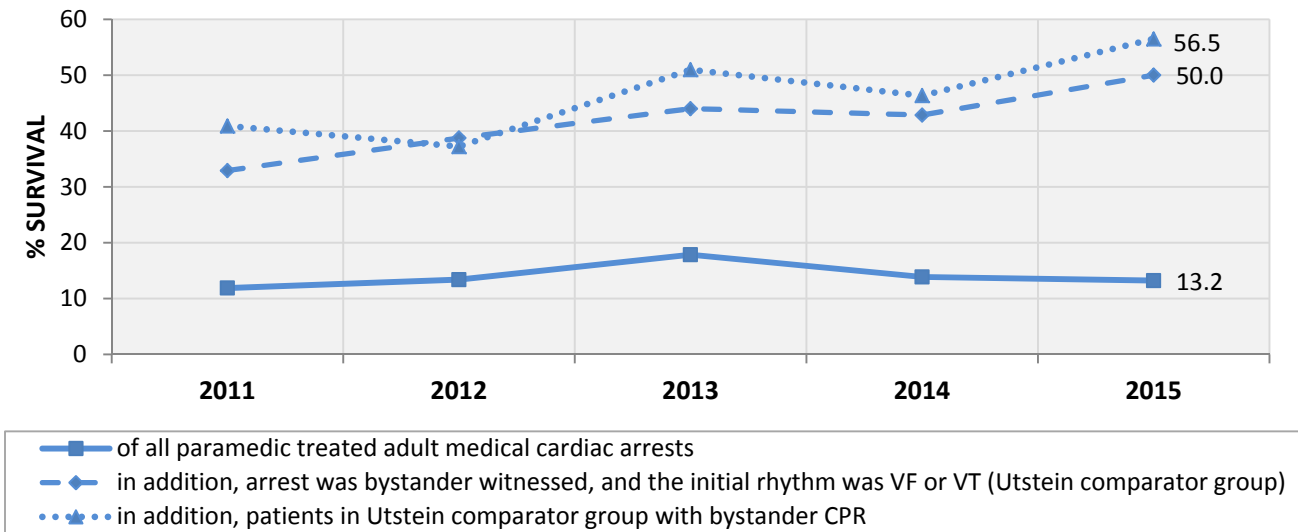
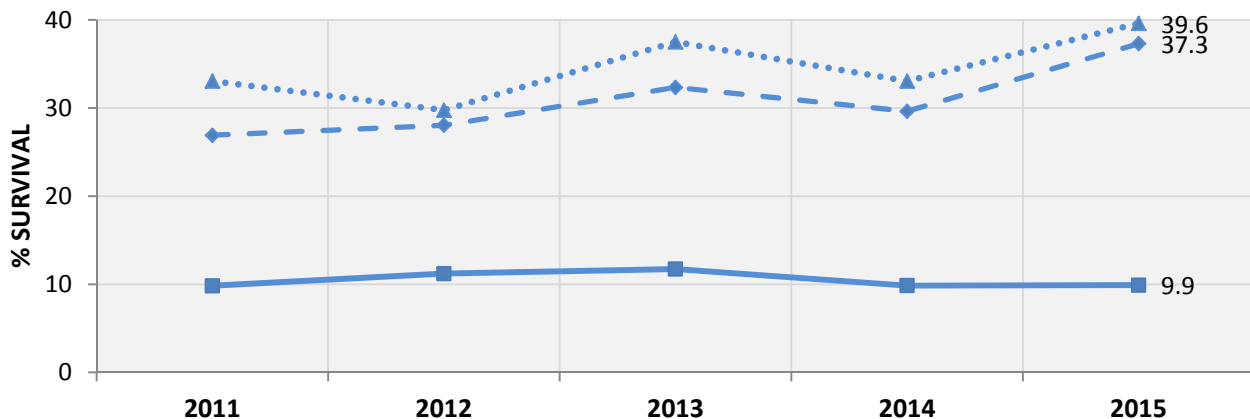


Figure 1b. Survival to discharge following cardiac arrest across RPPEO



In 2015, Ottawa Paramedic Service attempted resuscitation on 431 adult medical cardiac out-of-hospital arrests. Of these, 57 (13.2%) survived to discharge, compared to 9.9% across the Regional Paramedic Program for Eastern Ontario (RPPEO).

Of the 431 arrests, there were 84 patients that were bystander witnessed arrests and who had an initial rhythm of VF or VT (Utstein comparator group criteria). 42 of these 84 patients (50.0%) survived discharged, compared to a survival rate of 37.3% for patients fitting the Utstein criteria across the RPPEO.

In addition to the Utstein comparator group criteria above, 46 patients also had bystander CPR performed prior to paramedic arrival. 56.5% (26) of these patients survived to discharge compared to 39.6% across the RPPEO for patients fitting the same criteria.

Return of Spontaneous Circulation (ROSC)

Figure 2a. Return of spontaneous circulation (ROSC) on arrival at hospital following cardiac arrest for Ottawa Paramedic Service

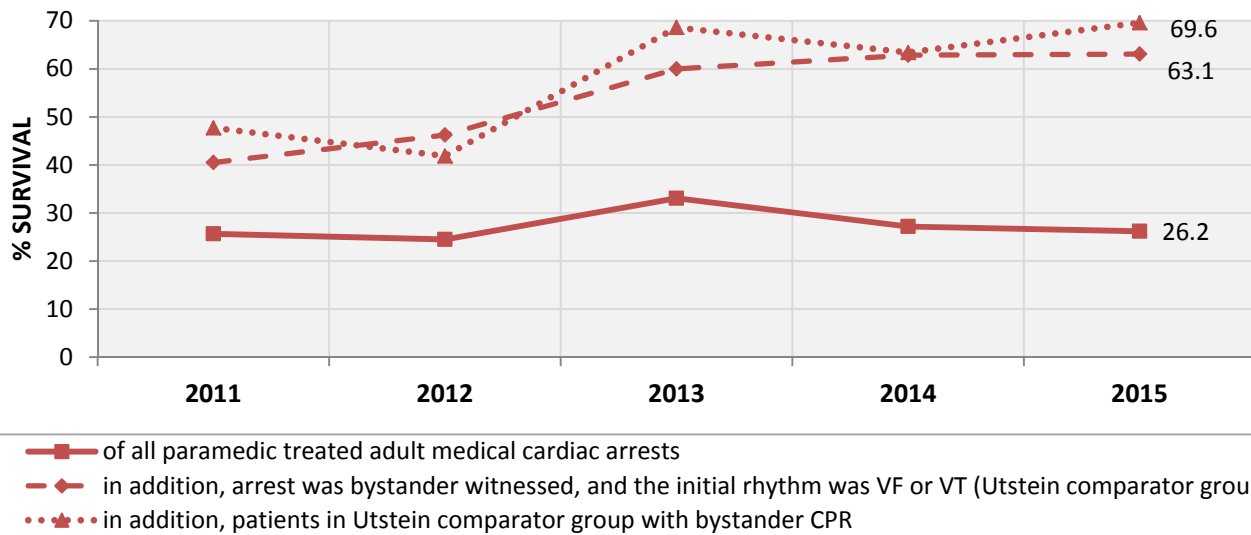
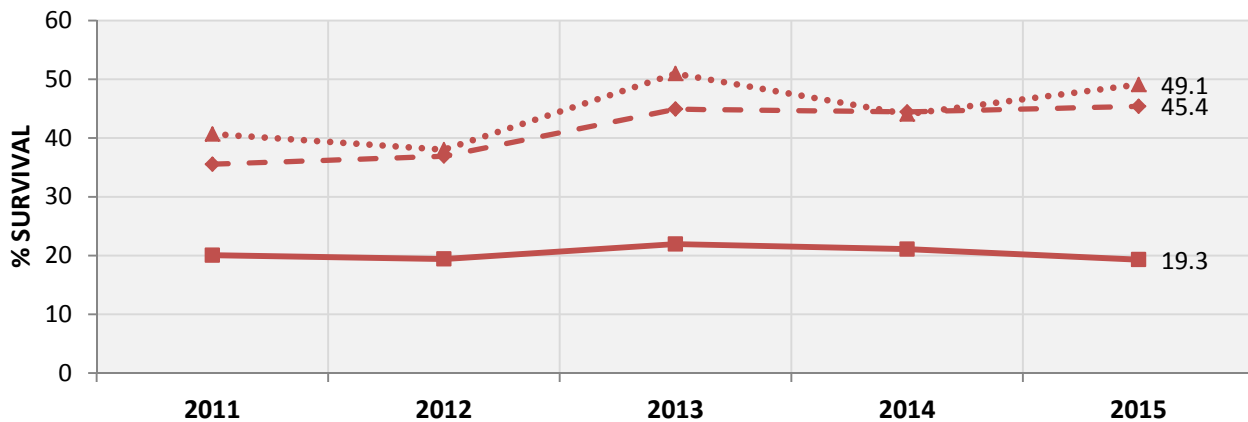


Figure 2b. Return of spontaneous circulation (ROSC) on arrival at hospital following cardiac arrest across RPPEO



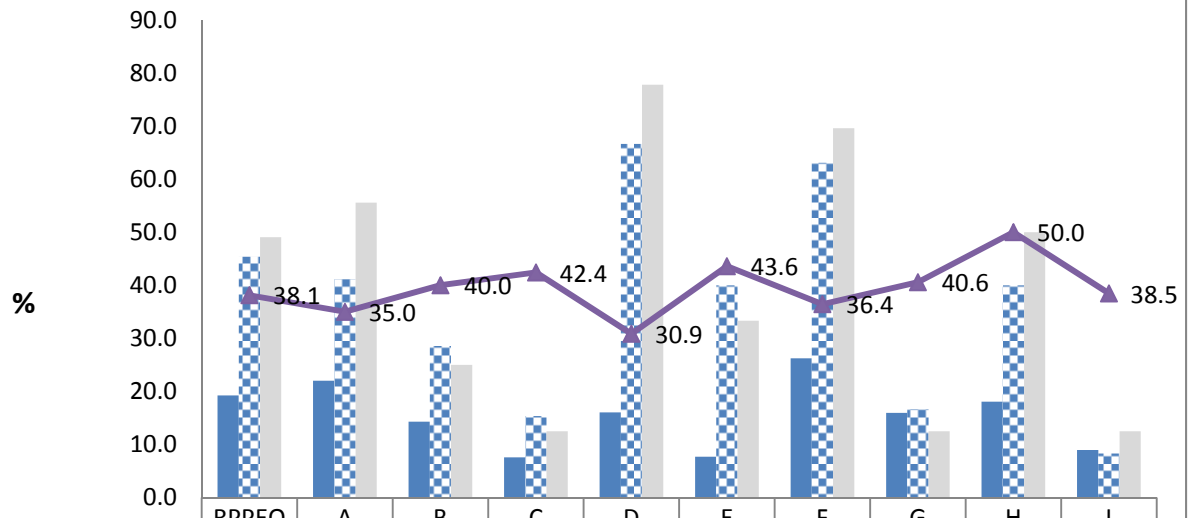
In 2015, Ottawa Paramedic Service attempted resuscitation on 431 adult medical cardiac out-of-hospital arrests. Of these, 113 (26.2%) had a ROSC on arrival to hospital, compared to 19.3% across the RPPEO.

Of the 431 arrests, there were 84 patients that were bystander witnessed arrests and who had an initial rhythm of VF or VT (Utstein comparator group criteria). 53 of these 84 patients (63.1%) had a ROSC on arrival to hospital, compared to 45.4% for patients fitting the Utstein criteria across the RPPEO.

In addition to the Utstein comparator group criteria above, 46 patients also had bystander CPR performed prior to paramedic arrival. 69.6% (32) of these patients had a ROSC on arrival to hospital, compared to 49.1% across the RPPEO for patients fitting the same criteria.

Return of Spontaneous Circulation & Bystander CPR across RPPEO

Figure 3. Return of spontaneous circulation (ROSC) on arrival at the hospital & bystander CPR rates for adult medical cardiac arrests across RPPEO & by service (de-identified A - I)

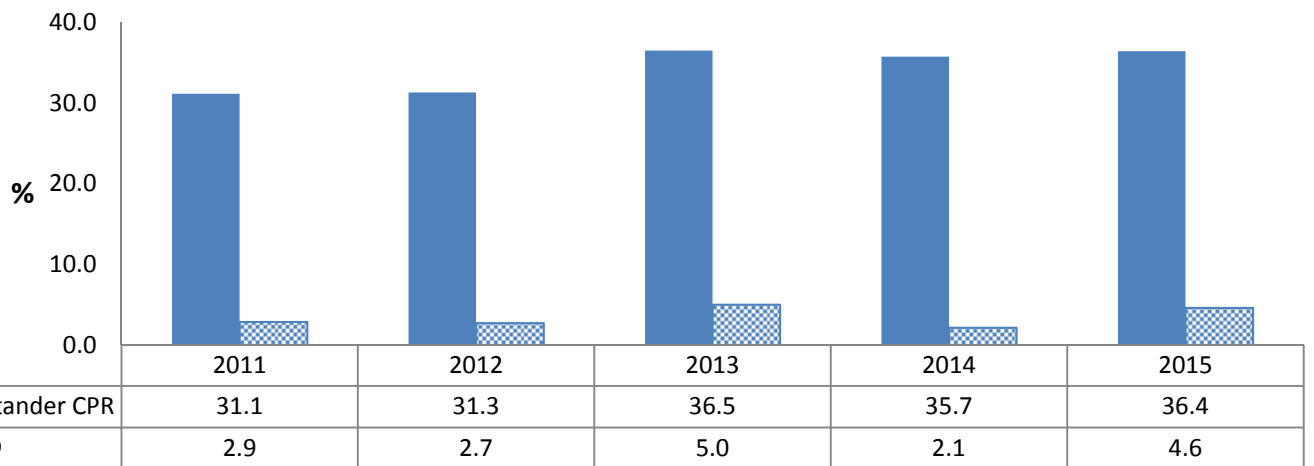


	RPPEO	A	B	C	D	E	F	G	H	I
ROSC o/a to hospital	19.3	22.0	14.3	7.6	16.1	7.7	26.2	15.9	18.1	9.0
Utstein & ROSC o/a to hospital	45.4	41.2	28.6	15.4	66.7	40.0	63.1	16.7	40.0	8.3
Utstein + bCPR & ROSC o/a to hospital	49.1	55.6	25.0	12.5	77.8	33.3	69.6	12.5	50.0	12.5
Bystander CPR rate	38.1	35.0	40.0	42.4	30.9	43.6	36.4	40.6	50.0	38.5

Ottawa Paramedic Service = F

Bystander CPR and Public Access Defibrillator (PAD) Rates

Figure 4. Percentage of Ottawa Paramedic Service medical cardiac patients receiving bystander CPR and PAD



TRAUMA TABLES

Characteristics

Table 2. Characteristics of 27 paramedic treated **TRAUMATIC** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

CHARACTERISTIC	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
Gender - males	18	(66.7)	(66.7 - 100)
Age, mean (SD) (mean age range), yrs	47.5	(20.4)	(20.0 – 70.0)
DISTRIBUTION OF AGE (YEARS)			
Adult 18-59	17	(63)	(33.3 - 100)
Senior 60+	10	(37)	(0 - 66.7)
Age not documented	0	(0)	(0 - 0)
LOCATION			
Public	17	(63)	(50 - 100)
Home Residence	9	(33.3)	(0 - 50)
Residential Institution	1	(3.7)	(0 - 3.7)
Healthcare Facility	0	(0)	(0 - 0)
ARREST WITNESSED			
Arrest Witnessed	15	(55.6)	(50 - 100)
by Paramedic/Fire/Police	3	(11.1)	(0 - 100)
by Bystander	12	(44.4)	(0 - 100)
Arrest UNWITNESSED	12	(44.4)	(0 - 50)
BYSTANDER CPR			
Bystander CPR Performed	5	(18.5)	(0 - 33.3)
No bystander CPR	22	(81.5)	(66.7 - 100)
INITIAL ARREST RHYTHM			
VT/VF (Shockable)	1	(3.7)	(0 - 14.3)
Asystole/PEA (Non-Shockable)	26	(96.3)	(85.7 - 100)
APPLIED AED 1st			
Bystander AED	0	(0)	(0 - 0)
Police	2	(7.4)	(0 - 7.4)
Fire	5	(18.5)	(0 - 20)
Paramedic	20	(74.1)	(74.1 - 100)
AED not used	0	(0)	(0 - 0)

Interventions

Table 3. Interventions applied to 27 paramedic treated TRAUMATIC out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
ACP on scene	25	(92.6)	(0 - 100)
Autopulse used	0	(0)	(0 - 0)
AIRWAY INTERVENTIONS			
Advanced Airway NOT Attempted	23	(85.2)	(40 - 100)
Advanced Airway Attempted *	4	(14.8)	(0 - 60)
Advanced Airway Successful	2	(50)	(0 - 100)
SGA attempted *	1	(3.7)	(0 - 40)
-SGA successful	1	(100)	(0 - 100)
-SGA successful on 1st attempt	1	(100)	(0 - 100)
ETT attempted *	3	(11.1)	(0 - 50)
-ETT successful	1	(33.3)	(0 - 100)
-ETT successful on 1st attempt	1	(33.3)	(0 - 100)
BVM (after unsuccessful ETT &/or SGA attempt(s))	2	(7.4)	(0 - 50)
IV/IO ACCESS			
IV/IO NOT Attempted	15	(55.6)	(0 - 100)
IV attempted *	10	(37)	(0 - 50)
-IV successful	8	(80)	(0 - 100)
IO attempted *	6	(22.2)	(0 - 100)
-IO successful	5	(83.3)	(0 - 100)
Only IO attempted (no IV attempted)	2	(7.4)	(0 - 50)

* (n) value used as denominator to measure associated % successful

Outcomes

Table 4. Outcomes of 27 paramedic treated **TRAUMATIC** out-of-hospital cardiac arrest attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

OUTCOMES	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
OVERALL			
Termination of Resuscitation (TOR)	12	(44.4)	(0 - 71.4)
Transported	15	(55.6)	(28.6 - 100)
<i>Survived to hospital admission</i>	2	(7.4)	(0 - 25)
<i>Survived to discharge</i>	1	(3.7)	(0 - 16.7)
<i>Outcome unknown</i>	0	(0)	(0 - 0)
ROSC IN FIELD	1	(3.7)	(0 - 20)
ROSC prior to transport or TOR	1	(100)	(100 - 100)
ROSC en route to hospital	0	(0)	(0 - 0)
Termination of Resuscitation (TOR)	0	(0)	(0 - 0)
Transported	1	(100)	(100 - 100)
<i>Survived to hospital admission</i>	1	(100)	(0 - 100)
<i>Survived to discharge</i>	1	(100)	(0 - 100)
<i>Outcome unknown</i>	0	(0)	(0 - 0)
NO ROSC IN FIELD	26	(96.3)	(80 - 100)
Termination of Resuscitation (TOR)	12	(46.2)	(0 - 71.4)
Transported	14	(53.8)	(28.6 - 100)
<i>Survived to hospital admission</i>	1	(3.8)	(0 - 25)
<i>Survived to discharge</i>	0	(0)	(0 - 0)
<i>Outcome unknown</i>	0	(0)	(0 - 0)
Paramedic/Fire/Police Witnessed	3	(11.1)	(0 - 100)
Termination of Resuscitation (TOR)	1	(33.3)	(0 - 33.3)
Transported	2	(66.7)	(66.7 - 100)
<i>Survived to hospital admission</i>	0	(0)	(0 - 0)
<i>Survived to discharge</i>	0	(0)	(0 - 0)
<i>Outcome unknown</i>	0	(0)	(0 - 0)

Destination Hospital & Survival Status

Table 5. Destination hospital & survival status for 15 paramedic treated & transported **TRAUMATIC** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

DESTINATION HOSPITAL	Transported	% of Total transported	Survived to discharge	% Survived (of Transported)
Montfort	2	(13.3)	0	(0)
The Ottawa Hospital - Civic Campus	10	(66.7)	1	(10)
The Ottawa Hospital - General Campus	1	(6.7)	0	(0)
Queensway Carleton	1	(6.7)	0	(0)
Winchester District Memorial	1	(6.7)	0	(0)
TOTAL	15		1	(6.7)
TERTIARY CENTRES (TC)				
Directly transported to TC	11	(73.3)	1	(6.7)
Directly transported to NON-TC	4	(26.7)	0	(0)
Initially transported to NON-TC & transferred to TC within 4 hrs	0	(0)	0	(0)*
Initially transported to NON-TC & transferred to TC (time unknown)	0	(0)	0	(0)*
Initially transported to NON-TC & NOT transferred to TC within 4 hrs	4	(100)	0	(0)*

* denominator used, n =Directly transported to NON-TC -Transported

PEDIATRIC MEDICAL TABLES

Characteristics

Table 2. Characteristics of 7 paramedic treated **PEDIATRIC MEDICAL** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

CHARACTERISTIC	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
Gender - males	3	(42.9)	(42.9 - 100)
Age, mean (SD) (mean age range), yrs	2.7	(6.3)	(0.0 – 8.5)
ETIOLOGY OF PEDIATRIC ARREST			
Medical - presumed Cardiac	1	(14.3)	(0 - 66.7)
Medical - presumed Non-Cardiac	6	(85.7)	(33.3 - 100)
DISTRIBUTION OF AGE (YEARS)			
Infants less than 1	5	(71.4)	(50 - 100)
Children 1-11	1	(14.3)	(0 - 50)
Adolescents 12-17	1	(14.3)	(0 - 50)
Age not documented	0	(0)	(0 - 0)
LOCATION			
Public	1	(14.3)	(0 - 25)
Home Residence	6	(85.7)	(75 - 100)
Residential Institution	0	(0)	(0 - 0)
Healthcare Facility	0	(0)	(0 - 0)
ARREST WITNESSED			
Arrest Witnessed	0	(0)	(0 - 100)
by Paramedic/Fire/Police	0	(0)	(0 - 0)
by Bystander	0	(0)	(0 - 100)
Arrest Unwitnessed	7	(100)	(0 - 100)
BYSTANDER CPR			
Bystander CPR Performed	3	(42.9)	(0 - 100)
No bystander CPR	4	(57.1)	(0 - 100)
INITIAL ARREST RHYTHM			
VT/VF (Shockable)	0	(0)	(0 - 25)
Asystole/PEA (Non-Shockable)	6	(85.7)	(0 - 100)
APPLIED AED 1st			
Bystander AED	0	(0)	(0 - 25)
Police	0	(0)	(0 - 0)
Fire	0	(0)	(0 - 100)
Paramedic	6	(85.7)	(0 - 100)
AED not used	1	(14.3)	(0 - 100)

Interventions

Table 3. Interventions applied to 7 paramedic treated **PEDIATRIC MEDICAL** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
ACP on scene	7	(100)	(0 - 100)
Autopulse used	0	(0)	(0 - 0)
AIRWAY INTERVENTIONS			
Advanced Airway NOT Attempted	3	(42.9)	(0 - 100)
Advanced Airway Attempted *	4	(57.1)	(0 - 100)
Advanced Airway Successful	4	(100)	(0 - 100)
<i>SGA attempted *</i>	2	(28.6)	(0 - 50)
-SGA successful	2	(100)	(100 - 100)
-SGA successful on 1st attempt	2	(100)	(100 - 100)
<i>ETT attempted *</i>	3	(42.9)	(0 - 100)
-ETT successful	2	(66.7)	(0 - 75)
-ETT successful on 1st attempt	2	(66.7)	(0 - 75)
BVM (after unsuccessful ETT &/or SGA attempt(s))	0	(0)	(0 - 100)
IV/IO ACCESS			
IV/IO NOT Attempted	1	(14.3)	(0 - 100)
<i>IV attempted *</i>	2	(28.6)	(0 - 66.7)
-IV successful	1	(50)	(0 - 100)
<i>IO attempted *</i>	5	(71.4)	(0 - 100)
-IO successful	4	(80)	(0 - 100)
<i>Only IO attempted (no IV attempted)</i>	4	(57.1)	(0 - 100)

* (n) value used as denominator to measure associated % successful

Outcomes

Table 4. Outcomes of 7 paramedic treated **PEDIATRIC MEDICAL** out-of-hospital cardiac arrest attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

OUTCOMES	DATA (n)	(%)	RANGE ACROSS RPPEO (%)
OVERALL			
Termination of Resuscitation (TOR)	0	(0)	(0 - 25)
Transported	7	(100)	(75 - 100)
<i>Survived to hospital admission</i>	1	(14.3)	(0 - 25)
<i>Survived to discharge</i>	1	(14.3)	(0 - 25)
<i>Outcome unknown</i>	0	(0)	(0 - 100)
ROSC IN FIELD	1	(14.3)	(0 - 25)
ROSC prior to transport or TOR	1	(100)	(100 - 100)
ROSC en route to hospital	0	(0)	(0 - 0)
Termination of Resuscitation (TOR)	0	(0)	(0 - 0)
Transported	1	(100)	(100 - 100)
<i>Survived to hospital admission</i>	1	(100)	(100 - 100)
<i>Survived to discharge</i>	1	(100)	(100 - 100)
<i>Outcome unknown</i>	0	(0)	(0 - 0)
NO ROSC IN FIELD	6	(85.7)	(75 - 100)
Termination of Resuscitation (TOR)	0	(0)	(0 - 33.3)
Transported	6	(100)	(66.7 - 100)
<i>Survived to hospital admission</i>	0	(0)	(0 - 0)
<i>Survived to discharge</i>	0	(0)	(0 - 0)
<i>Outcome unknown</i>	0	(0)	(0 - 100)
Paramedic/Fire/Police Witnessed	0	(0)	(0 - 0)
Termination of Resuscitation (TOR)	0	(n/a)	(0 - 0)
Transported	0	(n/a)	(0 - 0)
<i>Survived to hospital admission</i>	0	(n/a)	(0 - 0)
<i>Survived to discharge</i>	0	(n/a)	(0 - 0)
<i>Outcome unknown</i>	0	(n/a)	(0 - 0)

Destination Hospital & Survival Status

Table 5. Destination hospital & survival status for 7 paramedic treated & transported **PEDIATRIC MEDICAL** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

DESTINATION HOSPITAL	Transported	% of Total transported	Survived to discharge	% Survived (of Transported)
Children's Hospital for Eastern Ontario	2	(28.6)	1	(50)
Montfort	2	(28.6)	0	(0)
The Ottawa Hospital - Civic Campus	2	(28.6)	0	(0)
Queensway Carleton	1	(14.3)	0	(0)
TOTAL	7		1	(14.3)
TERTIARY CENTRES (TC)				
Directly transported to TC	4	(57.1)	1	(14.3)
Directly transported to NON-TC	3	(42.9)	0	(0)
Initially transported to NON-TC & transferred to TC within 4 hrs	0	(0)	0	(0)*
Initially transported to NON-TC & transferred to TC (time unknown)	0	(0)	0	(0)*
Initially transported to NON-TC & NOT transferred to TC within 4 hrs	3	(100)	0	(0)*

* denominator used, n=Directly transported to NON-TC -Transported

MEDICAL NON-CARDIAC TABLE

Table 6. Reason & outcome for 35 paramedic treated **MEDICAL NON-CARDIAC** out-of-hospital cardiac arrests attended to by Ottawa Paramedic Service in 2015. Data are presented as numbers (percentage) unless otherwise stated.

MEDICAL NON-CARDIAC - REASON & OUTCOME	n	(%)	TOR	(%)	Survived to discharge	(%)
PEDIATRICS 0-17 YEARS						
Foreign body obstruction	0	(0)	0	(0)	0	(0)
Hanging	1	(2.9)	0	(0)	0	(0)
SIDS	5	(14.3)	0	(0)	1	(2.9)
Anaphylaxis	0	(0)	0	(0)	0	(0)
Drowning	0	(0)	0	(0)	0	(0)
Neonate	0	(0)	0	(0)	0	(0)
Respiratory	0	(0)	0	(0)	0	(0)
Smoke inhalation	0	(0)	0	(0)	0	(0)
Drug poisoning/overdose	0	(0)	0	(0)	0	(0)
Mechanical suffocation	0	(0)	0	(0)	0	(0)
Strangulation	0	(0)	0	(0)	0	(0)
Excessive cold	0	(0)	0	(0)	0	(0)
Chemical Poisoning	0	(0)	0	(0)	0	(0)
ADULTS 18+ YEARS						
Foreign body obstruction	5	(14.3)	1	(2.9)	1	(2.9)
Hanging	16	(45.7)	10	(28.6)	0	(0)
Anaphylaxis	0	(0)	0	(0)	0	(0)
Drowning	2	(5.7)	0	(0)	0	(0)
Respiratory	0	(0)	0	(0)	0	(0)
Smoke inhalation	1	(2.9)	0	(0)	0	(0)
Drug poisoning/overdose	3	(8.6)	0	(0)	0	(0)
Mechanical suffocation	0	(0)	0	(0)	0	(0)
Strangulation	1	(2.9)	1	(2.9)	0	(0)
Excessive cold	0	(0)	0	(0)	0	(0)
Chemical Poisoning	1	(2.9)	1	(2.9)	0	(0)
TOTAL	35		13	(37.1)	2	(5.7)