



MEDECIN SPORTS **RENAU**
RÉSEAU NORD ALPIN DES URGENCES

**Survie des arrêts cardiaques sur domaine skiable :
Une analyse du registre du Réseau Nord Alpin des
Urgences (2004-2014)**

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Cet hiver, vous allez faire un arrêt cardiaque.

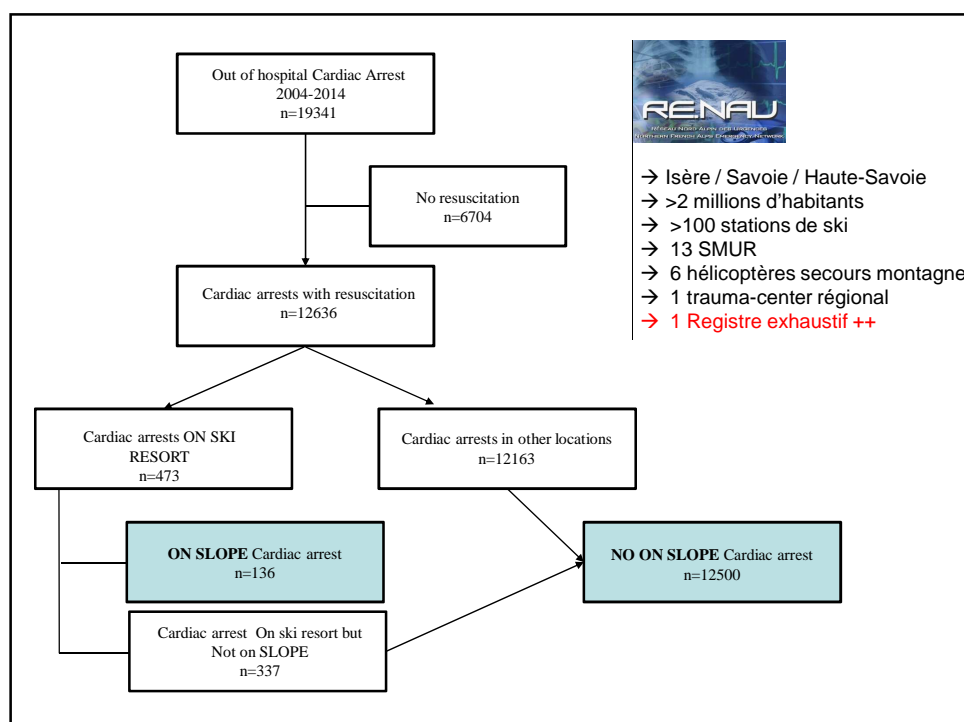


Où préférez-vous vous trouver ? (votre but est de survivre)



VS





Survie à 30 jours : comparaison à la population générale

Table 1. Characteristics of cardiac arrest on ski slopes compared to all cardiac arrest on other locations for a 10 year period

	On Slope n=136	Not on Slope n=12500	Total n=12636	P*
Patient characteristics				
Male gender (%)	121 (89)	8813 (70.5)	8934 (70.7)	<0.001
Age, year; median (IQR)	56 (40–65)	66 (52–79)	66 (52–78)	<0.001
Description of cardiac arrests				
Presumed Etiology of cardiac arrest (%)				
Cardiac	95 (69.9)	8092 (64.7)	8187 (64.8)	0.22
Trauma	33 (24.3)	1274 (10.2)	1305 (10.3)	<0.001
Respiratory	0 (0)	1412 (11.3)	1412 (11.2)	NA
Other / Unknown	8 (5.9)	1724 (13.8)	1732 (13.7)	0.016
Witnessed arrest (%)	107 (78.7)	9269 (74.2)	9376 (74.2)	0.23
Bystander CPR (%)	59 (43.4)	3345 (26.8)	3404 (26.9)	<0.001
First documented rhythm (%)				
Pulseless electrical activity	4 (2.9)	1502 (12)	1506 (12)	0.001
Asystole	76 (55.9)	8484 (67.9)	8560 (67.7)	0.003
Ventricular fibrillation / Ventricular tachycardia	56 (41.2)	2514 (20.1%)	2570 (20.3)	<0.001
Time from call to : (min; median (IQR))				
First CPR (min)	0 (0–5)	14 (9–20)	14 (9–20)	<0.001
First shock	7.5 (4–12.3)	14 (9–20)	14 (9–20)	<0.001
First responders' arrival	10 (5–17)	11 (8–15)	11 (8–15)	0.26

CPR : cardiopulmonary resuscitation ; IQR : Inter quartile range * Chi² or Fisher's exact test when appropriate

Survie à 30 jours : comparaison à la population générale

Table 2. Outcomes for cardiac arrest on ski slopes compared to all cardiac arrest on other locations for a 10 year period

	On Slopes n=136	Not on Slopes n=12500	Total n=12636	p*
ROSC (%)	70 (51.5)	3449 (27.6)	3519 (27.8)	<0.001
Delay between CA to ROSC (min)	17 (8–30)	27 (16–39)	27 (16–39)	<0.001
30 days survival (%)	29 (21.3)	740 (5.9)	769 (6.1)	<0.001
1 year survival (%)	29 (21.3)	686 (5.5)	715 (5.7)	<0.001
1 year CPC 1-2 (%)	29 (21.3)	591 (4.7)	620 (4.9)	<0.001

ROSC : return of spontaneous circulation ; CPC : cerebral performance category * Chi² or Fisher's exact test when appropriate

Survie à 30 jours : comparaison à la population générale

Table 3. Multivariate analysis for **30 day survival** of cardiac arrest on ski slopes compared to all cardiac arrest on other locations

	OR	(95% CI)	p
Age	0.96	(0.95–0.96)	<0.001
Sex (male)	0.51	(0.42–0.62)	<0.001
Witnessed arrest	0.59	(0.44–0.77)	<0.001
Bystander CPR	2.48	(1.96–3.14)	<0.001
First responder arrival delay	0.95	(0.93–0.97)	<0.001
Initial rhythm			
Asystole	reference		
Pulseless electrical activity	2.15	(1.50–3.08)	<0.001
Ventricular fibrillation / Ventricular tachycardia	7.93	(6.31–9.95)	<0.001
Presumed etiology of cardiac arrest			
Cardiac	reference		
Trauma	0.29	(0.19–0.44)	<0.001
Other / unknown	0.69	(0.54–0.87)	0.002
On slope Cardiac arrest	2.61	(1.42–4.81)	0.002

CPR : cardiopulmonary resuscitation

Analyse de sensibilité : comparaison à la population des stations

Outcomes for cardiac arrest on ski slopes compared to cardiac arrest **on ski resort but not on slopes** (sensitivity analysis)

	On Slopes n=136	Not on Slopes n=337	Total n=473	p*
ROSC (%)	70 (51.5)	98 (29)	168 (33.5)	<0.001
Delay to ROSC (min)	17 (8–30)	25 (13–40)	20 (10–37)	0.031
30 days survival (%)	29 (21.2)	26 (7.7)	55 (11.6)	<0.001
1 year survival (%)	29 (21.2)	26 (7.7)	55 (11.6)	<0.001
1 year CPC 1-2 (%)	29 (21.2)	21 (6.2)	50 (10.6)	<0.001

ROSC : return of spontaneous circulation ; CPC : cerebral performance category * Chi² or Fisher's exact test when appropriate

Analyse de sensibilité : comparaison à la population des stations

Multivariate analysis for 30 day survival of cardiac arrest on ski slopes compared to cardiac arrest **on ski resort but not on slopes** (sensitivity analysis)

	OR	(95% CI)	p
Age	0.96	(0.94–0.98)	<0.001
Sex (male)	0.24	(0.08–0.7)	0.009
Witnessed arrest	0.42	(0.08–2.01)	0.28
Bystander CPR	4.53	(1.07–19.17)	0.040
First responder arrival delay	0.94	(0.89–0.99)	0.040
Initial rhythm			
Asystole	reference		
Pulseless electrical activity	NA	NA	NA
Ventricular fibrillation / Ventricular tachycardia	8.40	(6.31–9.95)	<0.001
Presumed etiology of cardiac arrest			
Cardiac	reference		
Trauma	0.61	(0.16–2.28)	0.47
Other / unknown	0.78	(0.20–3.05)	0.73
On slope Cardiac arrest	3.72	(1.55–8.86)	0.003

CPR : cardiopulmonary resuscitation

Que conclure ?

- Plus grande série décrite, exhaustive, avec pop. comparative issue du même registre
- Populations très différentes (jeunes, hommes)
- Délais de massage plus courts (témoins++),
- Délais de premier CEE plus courts (Pisteurs++)
- Délais de médicalisation similaires (organisation et moyens+++)

- Meilleure survie brute
- Meilleure survie même après prise en compte des facteurs de survie habituels

OR 2.61 (1.42–4.81)

- Effet «Healthy skiers» ???
- Effet «Post-resuscitation» ?
- Effet «trauma center» via héliportage ?

