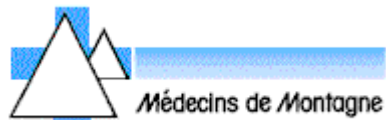




Severe injuries on the slopes

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Rescue organization

Stakeholders:

Ski patrollers

Healthcare emergency helicopter

Medical facilities in the resorts

Public or private hospital valley

General or specialized reference hospital



Rescue organization

Stakeholders:

Patroller at the scene of the accident

Central track / resort rescue service

Regulation of medical calls for emergency helicopter

112 Emergency calls (tel 15 in France)



Helicopter base in Avoriaz

30 ski resorts at less of 7 min flight

- 1 call center with operator
- 2 crews (pilot-mechanic)
- 2 helicopters
- 1 doctor (emergency)



Local medical facilities in the resort (radiography equipment, expertise in trauma)

Valley public hospitals (Thonon, Sallanches), 2 clinics (Cluses, Annemasse)

CH Annecy (angioplasty, embolization) 20 min

CHU Grenoble 45 min

HU Geneva 15 min

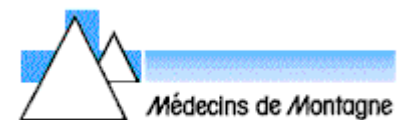


Which are the severe injuries?

4% of all accident require an immediate hospitalization
5500 patients, with 175 cases of vital risk

1 accident on 10 is linked to a collision (more head injuries)

18% of snowboarders, but 21.5% of the injured
Snowpark: increased severity of accidents





What can be done on the slopes?

- management of pain: Morphine, Ketamine, ALR, femoral blocks
preparation for transport
packaging, extraction
resuscitation
intubation: ISR
fibrinolysis



Rescue organization

Transport to hospital by helicopter is decided after medical regulation for injured or sickness such as:

- fractures of the femur
- open leg fractures
- hip dislocations
- severe head injuries
- myocardial infarction
- hypovolemia



Rescue organization in ski resort

- Severe head injuries are transported to an adequate hospital if :

GCS <13

Focal neurological signs

embarrure

Multiple trauma associated



Numbers of helicopter rescues made by Mont Blanc Helicopters Winter season from 2002 to 2009

5206 simple helicopter rescues

1595 medical helicopter rescues (**200 each winter**)

- 651 transported to a local medical center
- 758 directly transported to a hospital
- 172 transported from a medical center to a hospital





Severe traumas

Head injuries : 28 %

Poly trauma : 22%

Rupture abdominal organ : 21%

Spine injuries : 16%





Main reasons of severe cases with hospitalization or death

Traumas : 870 patients (92%)

Médical : 73 patients (8%)

Fatalities on the slopes: 12 patients 1,3%

Severe traumas : 89 patients 9%

Femoral fractures : 210 patients 22%

Leg fractures : 131 patients 14%

Acute coronary syndrom : 28 patients 3%

Cardio respiratory failure (medical or trauma) : 16 1,6%

Cerebral vascular failure : 13 1,3%





Ressuscitated cardiac arrest

Medical reasons : 14

Trauma reasons : 2

Survival without sequelae : 7 soit 50%

Etiology :

- acute coronary syndrome : 8 with 7 survival without sequelae
- cerebal hemorrhage : 1 – fatality 3 months later in Grenoble
- hypokalemia : 1 – fatality after 15 days resuscitation in Annecy
- abdominal hemorrhage : 1 – fatality in Geneva
- 4 unknown reasons



Results after 8 seasons

Difficulties:

- Medical activity in dangerous situations
- Medical transfer in accordance to medical diagnosis, change in the forecast
- Safety of the helicopters on the slopes (DZ, winching ...)



Positives :

- the **organisation between patrollers – medical regulation**
- **coordination** with emergency calls Centre 15, Smurs, local hospitals
- links (RENAU - RESURCOR, empowered doctors by SAMU)
- establishment of **protocols** medicalization (SFMU, RENAU)
- local share of our experiments : ANMSM, GRIMM, RENAU, MdM ...

Example of medical care on the slopes















Conclusion

Severe trauma is no longer the exclusive of road accidents.

The number of serious trauma or vital medical emergency each winter season in the Alps justifies the establishment of a medical facility by helicopter in the resort able to fly either to a local medical facility or to hospitals.



Thank you for your attention!