

# SNOW SPORTS INJURIES IN ANDORRA EPIDEMIOLOGY AND MANAGEMENT OF SEVERE INJURIES

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# ANDORRA

- 462 square km
- 80000 inhabitants
- 2,000,000 skier-days/season



# Medical centers in the andorran ski areas

TWO MAIN SKING  
AREAS:

## **GRANDVALIRA:**

2 MEDICAL  
CENTERS:

- Pas de la Casa-  
Grau Roig (2 sites)
- Soldeu-El Tarter (3  
sites)

## **VALLNORD:**

3 MEDICAL  
CENTERS

- Pal (1 site)
- Arinsal (1 site)
- Ordino-Arcalis (1  
site)

1 hospital:

## HOSPITAL NOSTRA SENYORA DE MERITXELL

- 30 to 50 mn from the ski resorts medical centers
- equiped to attend the most common medical and surgical problems (general and orthopedic surgery, critical cares...)
- Cardiocirculatory surgery and neurosurgery is not available, in this cases patients must be transfered to Barcelona (200 km) or Toulouse (180 km) by road (>2 hours) or helicopter (45 mn) , depending on weather conditions

# SNOW SPORTS INJURIES IN ANDORRA

- we have old registers beginning in the seventies by their are not standardized, in paper forms, with no control groups

- efforts have been made to improve the data collection

- for the last 5 seasons theres is a unique database resulting from the work of the ski patrols, the resorts medical centers and the hospital

in the last seasons

14,000 injuries/season

incidence: 5,86 per 1,000 skier-days

# TOTAL INJURIES IN PAS DE LA CASA-GRAU ROIG AREA during 2006-2007 season

3452 people

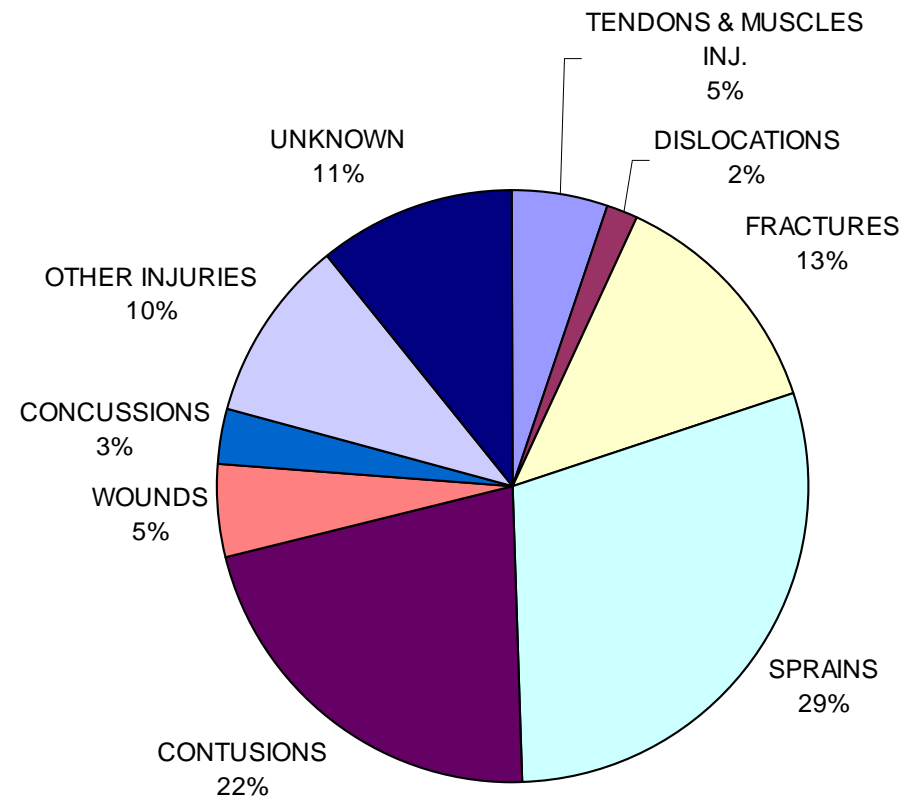
of which:

- 3320 were attended in  
the resort medical  
center
- 23 went by their own  
to Andorra hospital



3320 INJURIES attended in PAS DE LA CASA-GRAU  
ROIG MEDICAL CENTER (season 2006-2007)

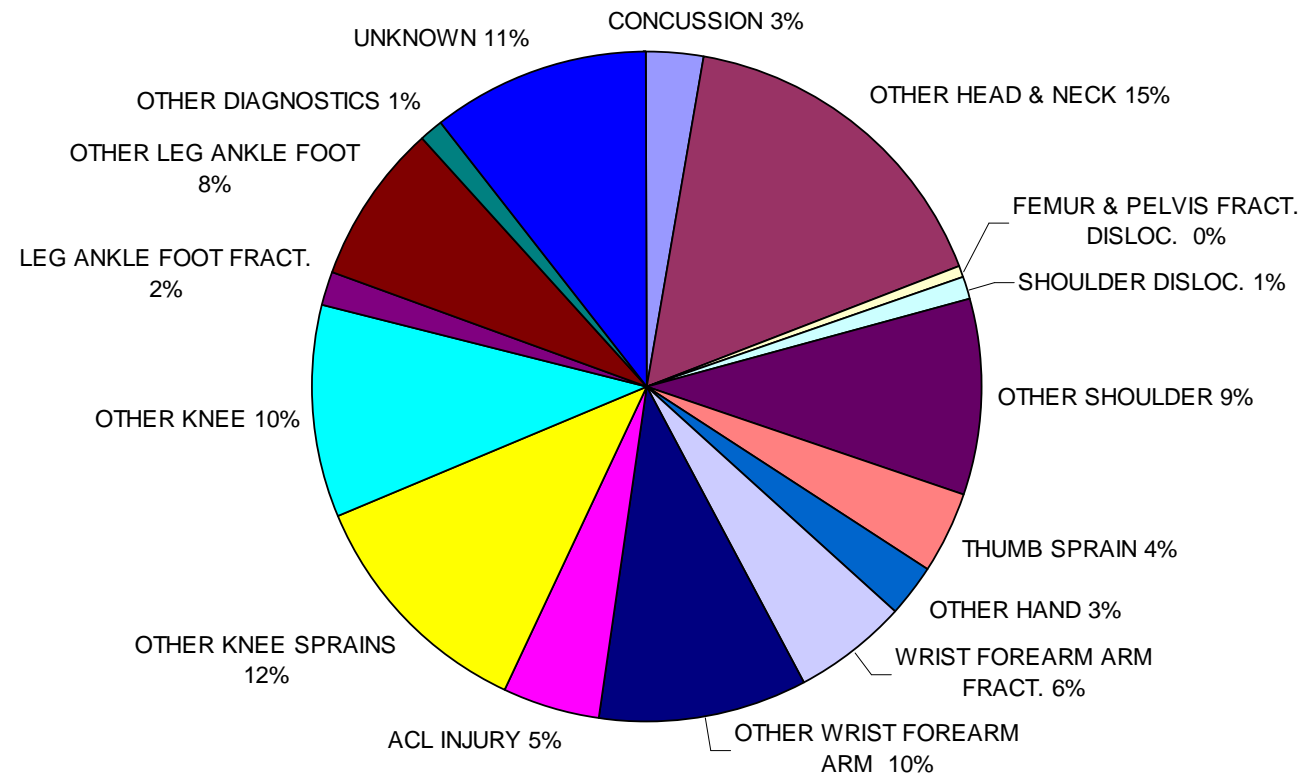
# TYPE OF INJURY





# 3320 INJURIES attended in PAS DE LA CASA-GRAU ROIG MEDICAL CENTER (season 2006-2007)

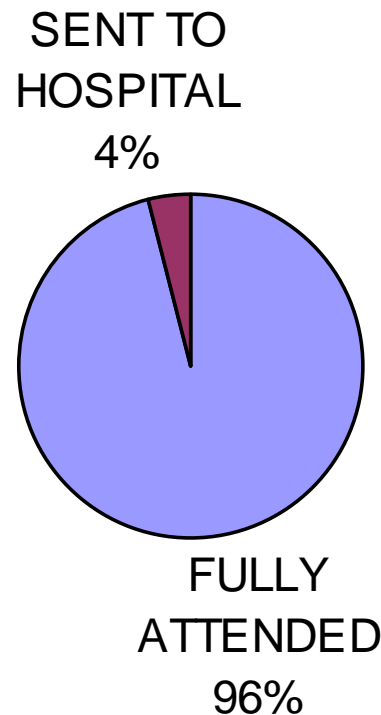
## INJURED REGION



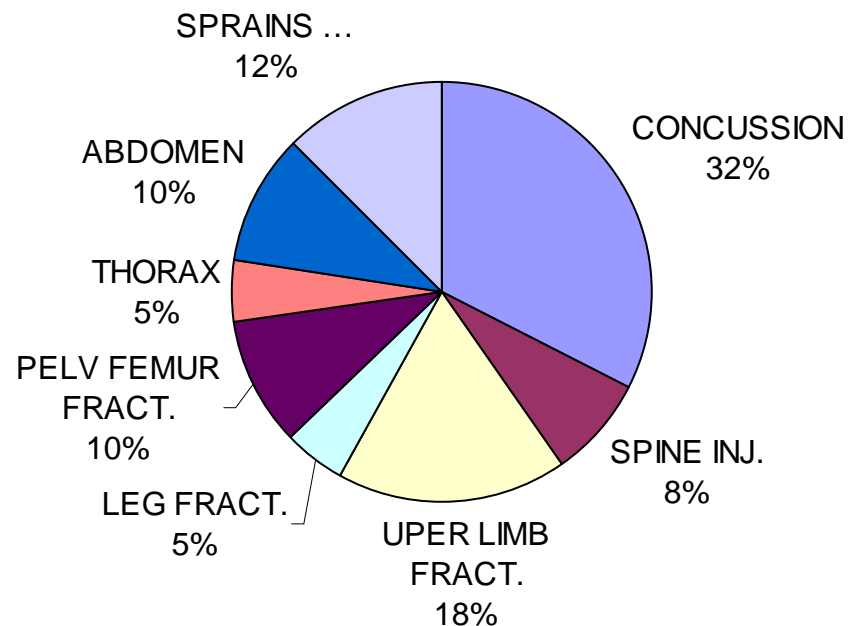
# 3320 INJURIES attended in PAS DE LA CASA-GRAU ROIG MEDICAL CENTER

- 3188 fully attended ...
- 122 sent to Andorra hospital for :
  - monitoring (mainly concussions ...)
  - complementary exams
  - surgical treatment

# 3320 INJURIES attended in PAS DE LA CASA- GRAU ROIG MEDICAL CENTER (season 2006- 2007)



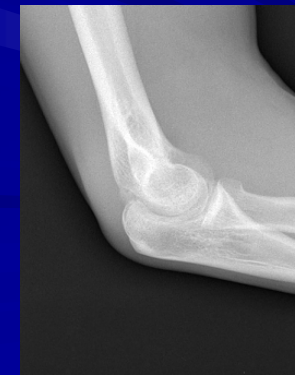
122 sent to Andorra hospital  
(4% of all the patients seen in the  
resort medical center)



# SEVERE INJURIES

Fractures or dislocations with  
risk of vascular/nervous compromise

Quick reduction is  
performed in our  
medical center in  
most of the cases,  
and then controlled by  
their own  
traumatologist, a few  
are transferred to the  
hospital



**SEVERE INJURIES** possibility of complications  
and / or  
need for further investigations (scan, blood analysis...)

**HEAD TRAUMA, ABDOMINAL TRAUMA  
DISEASE**

**→ HOSPITAL**

**SEVERE INJURIES** need for surgical treatment





# SEVERE INJURIES MANAGEMENT

## ski patrols

They are the first to attend the injured skier /snowboarder,  
Their initial evaluation is essential for the correct management of each case

If necessary they are able to assume resuscitation manoeuvres, oxygenotherapy, automatized DF ( devices in the higher points of the resort so they can be transported in 3 to 5 minutes to all the points of the ski area)

- permanent radio communication with the medical center in order to transmit the information



# SEVERE INJURIES MANAGEMENT

## medical center

2 doctors and 1 nurse in  
each area (trained in  
sports traumatology and  
emergency medicine) ,  
can be transported untill  
the patient by skidoo,  
transportable  
emergency bag  
(drugs, perfusion fluids,  
oro-tracheal intubation  
set ...), cardiac monitor  
/ DF



Con Bernard Escoda. 4 de abril  
del 2004, intervención del GRIM  
de Andorra, Zona La Portella



# SEVERE INJURIES

- THE PATIENT IS  
CONDICIONED TO BE  
TRANSPORTED  
SAFELY UNTIL THE  
MEDICAL CENTER  
WHERE A COMPLETE  
CHECK WILL BE MADE
- IF THE PATIENT  
REQUIRES  
TRANSPORTATION  
UNTIL THE HOSPITAL  
IT WILL BE DECIDED  
THE BEST  
TRANSPORTATION  
MEAN



# SEVERE INJURIES

## MEDICAL CENTER EQUIPEMENT:

- drugs, perfusion fluids, orotracheal intubation, cardiac monitor / DF

- OXYGEN

- X RAY



# SEVERE INJURIES

## transport until the hospital

- USUALLY A **MEDICALIZED AMBULANCE** WILL BE USED IN THE MOST SEVERE CASES (PHYSICIAN + NURSE)
- A **MEDICAL HELICOPTER** CAN BE USED TOO BUT IT IS NOT PERMANENTLY BASED IN THE HOSPITAL SO IT CAN BE TOO LONG TO ACTIVATE
- IN CASES THAT DON'T NEED MEDICATION AND WITH NO IMMEDIATE RISK OF COMPLICATION A **NON MEDICAL AMBULANCE** CAN BE USED (PARAMEDICS)





# SEVERE INJURIES

NEED OF A GOOD COORDINATION  
BETWEEN ALL THE INTERVENANTS

**SKI PATROLS-RESORT MEDICAL  
CENTER**

We work hand in hand, continuous radio communication, the medical center is involved in the continuous formation of the ski patrols

# SEVERE INJURIES

NEED OF A GOOD COORDINATION  
BETWEEN ALL THE INTERVENANTS

## **RESORT MEDICAL CENTER – HOSPITAL**

Phone coordination – exchange of  
information / medical reports in order to  
decide about the proper way to transport  
the injured



# SEVERE INJURIES

NEED OF A GOOD COORDINATION BETWEEN  
ALL THE INTERVENANTS

SKI PATROLS - RESORT MEDICAL CENTER – HOSPITAL

**ALL THE DATA ON SNOW SPORT INJURIES  
ARE COLLECTED IN A UNIQUE DATABASE**

**Further analysis of witch will probably:**

- **Help all of us to improve the attention to the injured people**
  - **Leed to prevention actions**

# THANK YOU!!!!!!

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