

Special situations II: Disaster medicine in extreme environment

Fulvio Kette, MD
Director, Emergency Dept. Pordenone Hospital Health Unit,
S. Vito al Tagliamento, Hospital

Objectives

- Definition of mass casualties, hazards, and disasters
- Development of rescue in mass emergencies in Friuli Venezia Giulia
- Mountain rescue: characteristics and condition
- Can the strategies for mass disaster be applied in the mountain rescue setting?

<u>#17</u>	Search ("mountaineering"[MeSH Terms]) AND #6 Limits: published in the last 2 years	<u>8</u>
<u>#16</u>	Search "mountaineering"[MeSH Terms] Limits: published in the last 2 years	<u>16</u> <u>8</u>
<u>#13</u>	Search (#12) AND #6 Limits: published in the last 2 years	<u>15</u>
<u>#12</u>	Search (((("mountain accidents"[All Fields]) OR "mountain"[All Fields]) OR "mountain rescue"[All Fields]) Limits: published in the last 2 years	<u>16</u> <u>52</u>
<u>#10</u>	Search (((("mountain accidents"[All Fields]) OR "mountain"[All Fields]) OR ("mass casualty"[All Fields] OR "mass casualty/disaster"[All Fields] OR "mass casualty accidents"[All Fields])) OR "rescue"[All Fields]) OR ("disaster"[All Fields] OR "disaster/accident"[All Fields] OR "disaster/catastrophe"[All Fields] OR "disaster/emergency"[All Fields]) Limits: published in the last 2 years	<u>81</u> <u>27</u>
<u>#11</u>	Search (#10) AND #6 Limits: published in the last 2 years	<u>47</u> <u>6</u>
<u>#6</u>	Search "Emergency Medical Services"[Mesh]	<u>76</u> <u>69</u> <u>1</u>

Epidemiology of mountain search and rescue operations in Banff, Yoho and Kootenay National Park, 2003-06. Wild FJ. Wild. Envir. Med. 2008,19:245

A survey of emergency medical services in mountain areas of Europe and North America. Brugger H. High Altit med & biol, 2005;6:226

Current status of medical training in mountain rescue in America and Europe. Elsensohn F. High Altit med & biol, 2009;10:195

Search and rescue in Alaska's National Parks. Heggie TW. Travel Med and Infec Dis, 2008;6:355

Search and rescue activity on Denali, 1990 to 2008. McIntosh SE. Wild. Envir. Med. 2010,21:103

Medical problems requiring mountain rescues from 1985 to 2007 in Yu-Shan National Park, Taiwan. Wang SH. High Altit med & biol, 2009;10:77

Disaster risk management

Disasters are a product of hazards combined with human vulnerability

Rapid onset disasters:
earthquakes, tropical
cyclones, floods

Slow onset disasters:
drought, global warming,
desertification,
environmental pollution

Not all hazards become
disasters.

**Often natural hazards become
disasters due to human
interventions** such as
deforestation, building
constructions on unstable land,
dam failures, etc



Italy, a country at high risk

Natural risk

- Lakes
- Rivers
- Dam
- Flood and landslides
- Earthquakes
- Fire
- Volcanos

Disasters in Friuli Venezia Giulia

Vajont dam (9 october 1963)



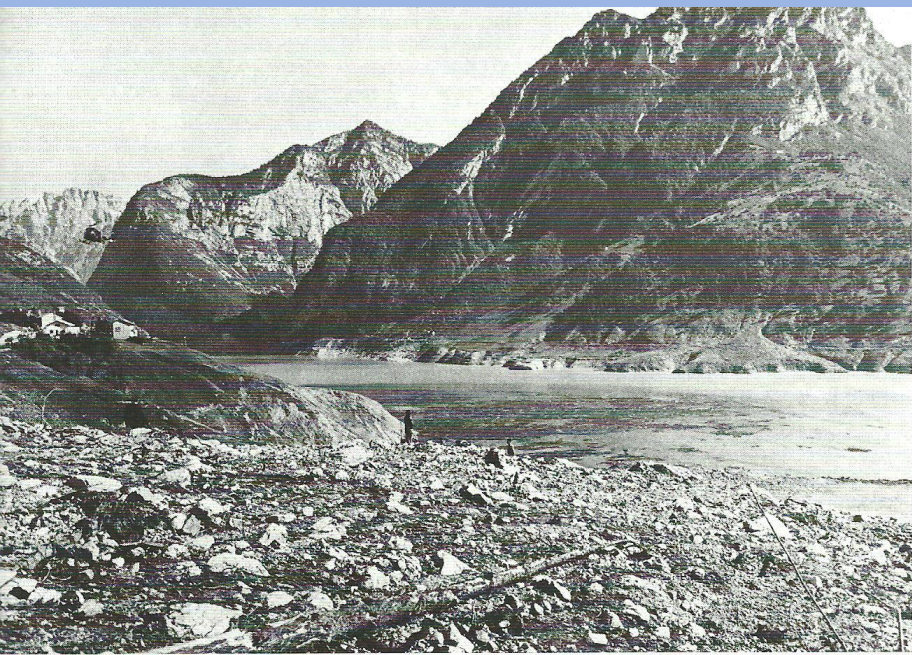
Reservoir behind Vajont dam filling. Source: <http://www.bottaonline.net/FotoVajont/invaso1.jpg>; accessed June 17, 2006.



Representation of the Vajont disaster. Source: http://www.worldwindcentral.com/hotspots/view_hotspot.php?id=1605; accessed June 17, 2006.



Piave River Valley scoured white after tsunami-type water wave rushed through it on October 9, 1963. Source: <http://www.bottaonline.net/FotoVajont/socc1B1.jpg>; accessed June 17, 2006.



9 October 1963
The disaster of Vajont dam



Terrificante documentazione della catastrofe



6 may 1976
Heartquake destroys Friuli



6 May 1976, heartquake in Friuli



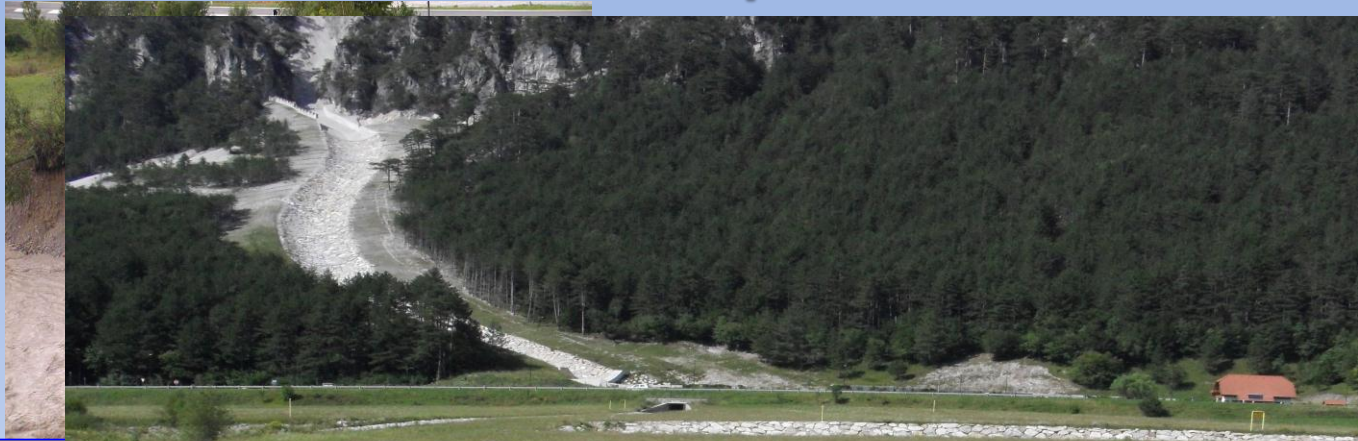
Fire



Flood, landslide, landslip



Floods are the most
mortality th



Valcanale e Canal del Ferro,
Aug 29 2003

Earthquake and tsunami in Japan, March 2011



Progressive development of mass emergency



Mass casualty care

Simplifying care (**austerity**)

Rationing care (adopting a **triage** ethic)

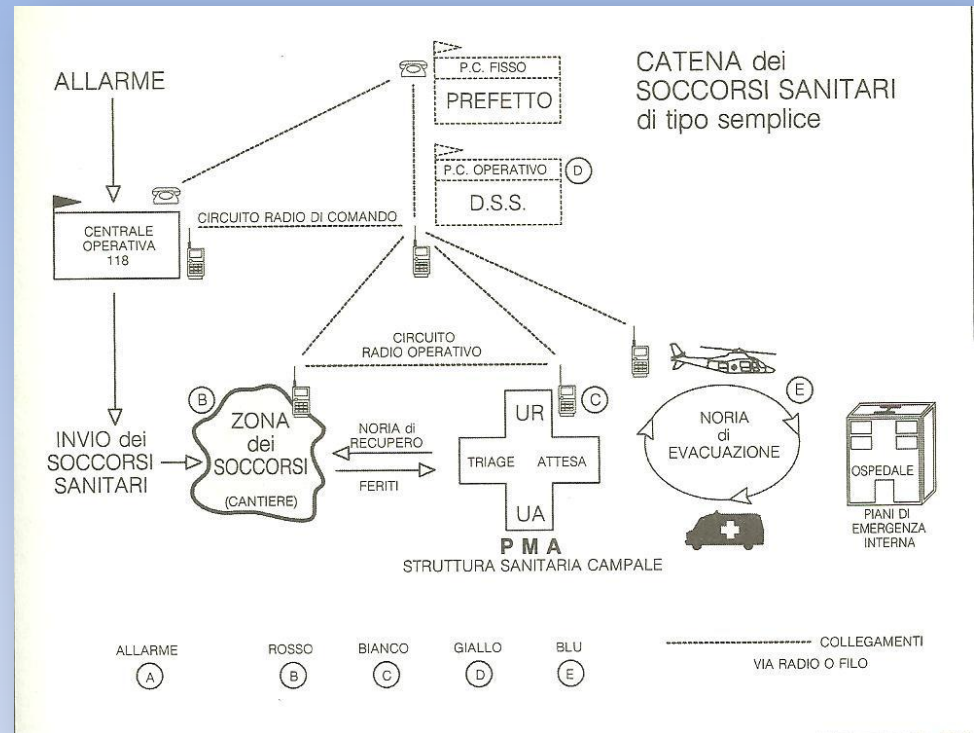
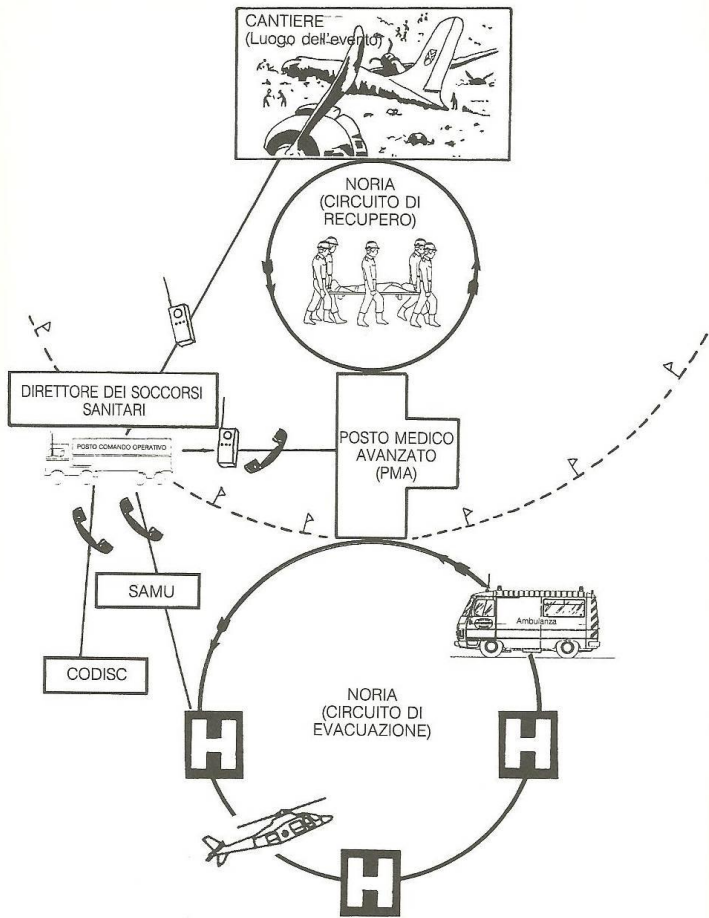
Calling for outside help

Instituting mass care measures typical of battlefield medicine

- **brief patient history (allergies, drugs, last meal, events)**
- **basic first aid measures and damage control surgery**
- **local hospitals may undergo rapid conversion to excess capacity**

Critical issues in mass emergencies

- Evolutive and dynamic risk
- Road destruction and transportation interruption
- Interruption of communication
- Disruption of public utilities (water, fuel) and energy supply



How many times and how quickly can this system be applied in remote or mountain areas?

Conditions hampering a prompt development of on-scene hospital, advanced medical aid and logistic facility

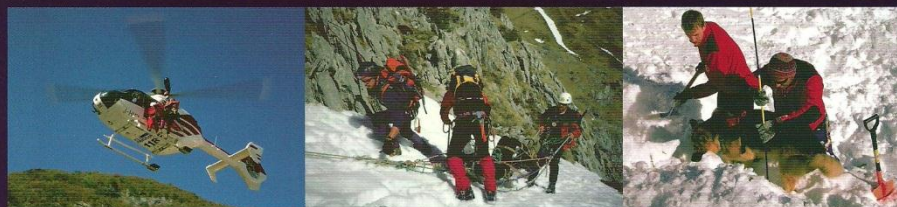
- Geographical conditions
- Road destruction
- Ice, snow
- Evolutive risk (fire, explosion, landslide, chemical risk, etc)



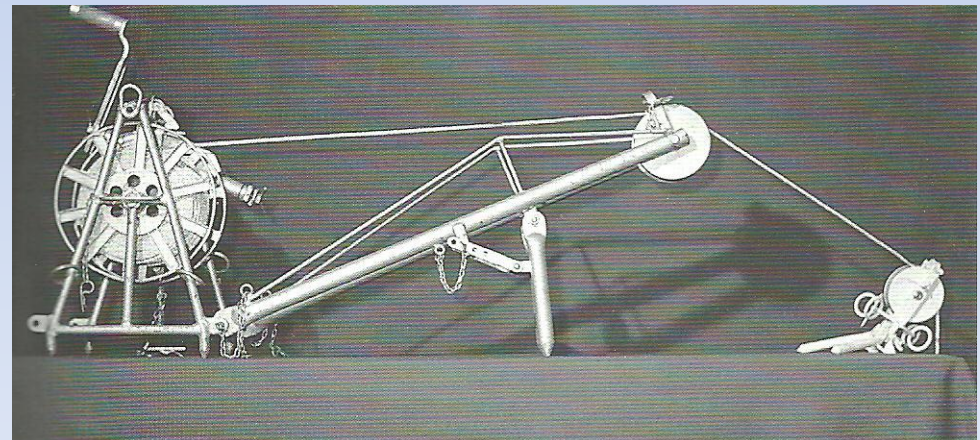
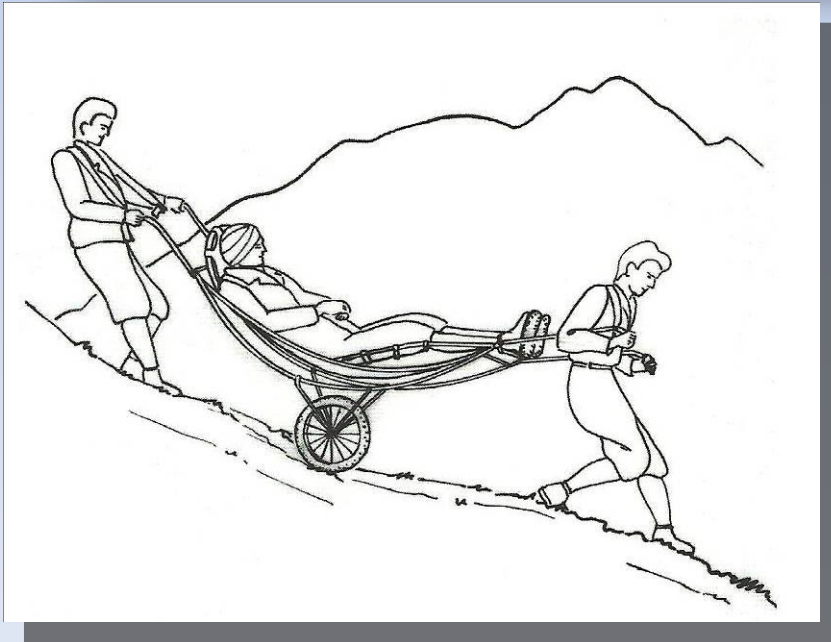
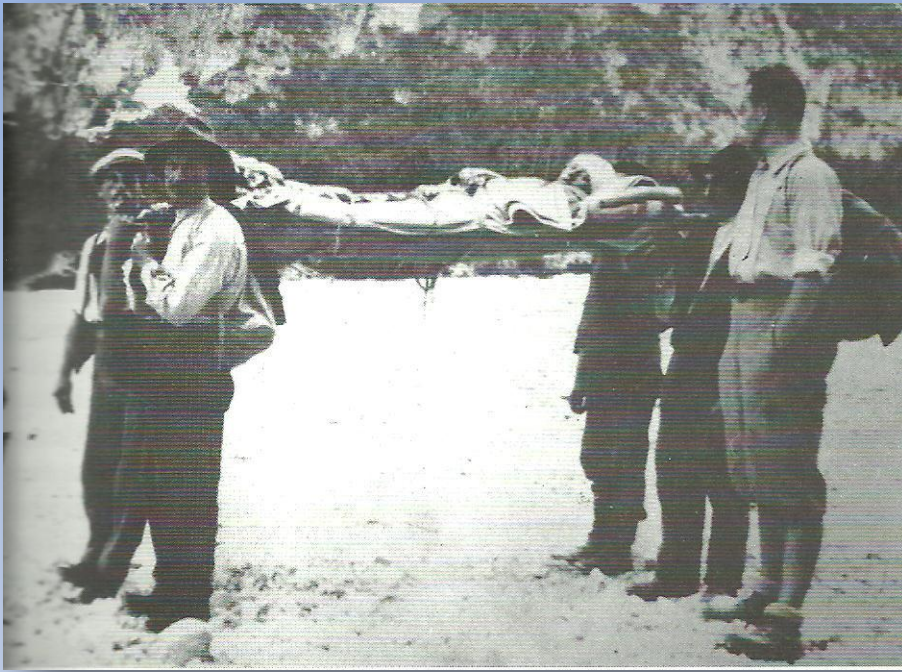
IL SOCCORSO ALPINO IN FRIULI VENEZIA GIULIA

1954
2004

*cinquant'anni
di solidarietà e coraggio*



editrice CO.EL.



Pictures from CNSAS, FVG 1954-2004

1° intervention with helicopter
Duranno mount., 17 sept. 1961



Pictures from CNSAS, FVG 1954-2004

Medical consideration in the use of helicopters in mountain rescue.

Tomazin I, Kovacs T. High Alt Med & Biol 2003;4:479

Main goals: bringing medical care to the patient
rapid transportation to medical facility

Patient's condition

Circumstances at the site of the accident

Activation time as short as possible

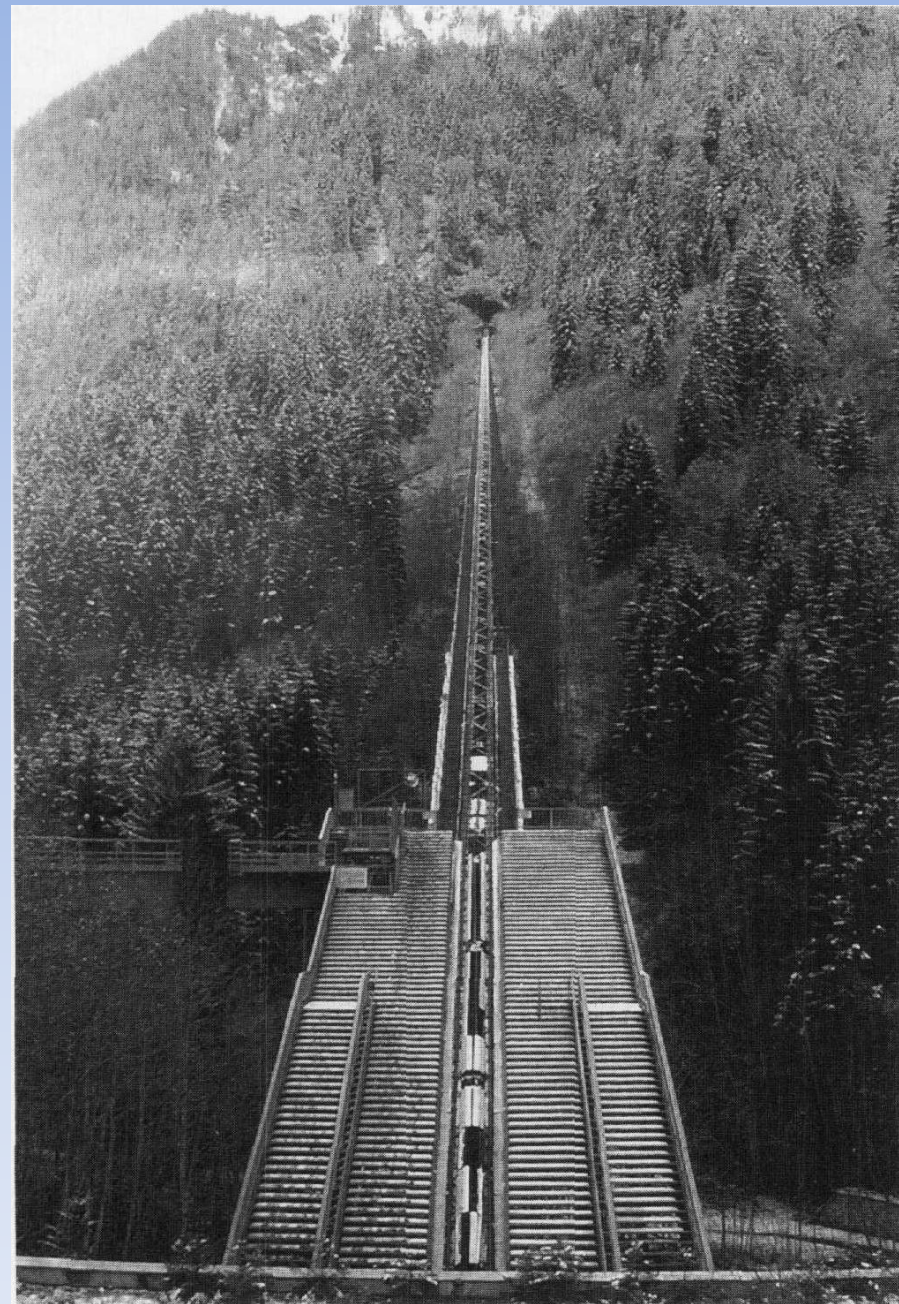
Assessment of flight and safety conditions

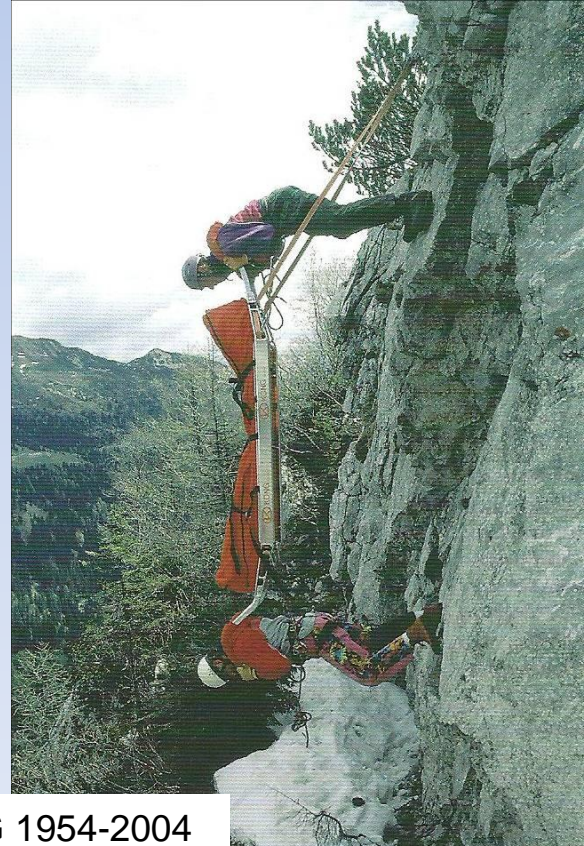
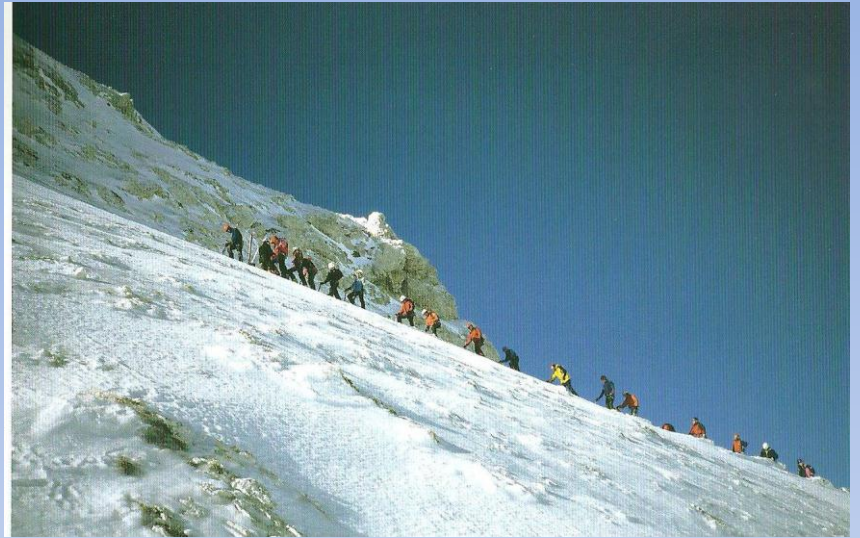
- **rescue and flight training**
- **competence of air and ground crews**
- **radio communication**
- **mission briefing before the rescue**

Management of a multinational
mass fatality incident in Kaprun,
Austria:
a forensic medical perspective.
Labovich MH. Military Medicine,
2003;168:1

A fire in a funicular servicing a ski
resort claimed 155 victims in a
mountain tunnel in Kaprun
(Nov 11 2000)

18 survivors, escaped by fleeing
downhill away from the upward rising
smoke and fire

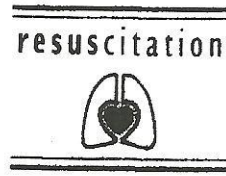




Pictures from CNSAS, FVG 1954-2004



Resuscitation 31 (1996) 11–16



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Volume 6, Number 1, 2005
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The Impact of Avalanche Transceivers on Mortality from Avalanche Accidents

Should strategies for care of avalanche victims change?

Hermann Brugger MD

Published at www.cmaj.ca on F

WILDERNESS & ENVIRONMENTAL MEDICINE, 21, 28–34 (2010)

CONCEPTS

Triaging Multiple Victims in an Avalanche Setting: The Avalanche Survival Optimizing Rescue Triage Algorithmic Approach

Lee B. Bogle, MD; Jeff J. Boyd, MBBS, UIAGM; Kyle A. McLaughlin, CCFP (EM)

Developing a coordinated team...



... and training all members of the team



Protocols

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DOI: 10.1089/ham.2008.1074

Theory

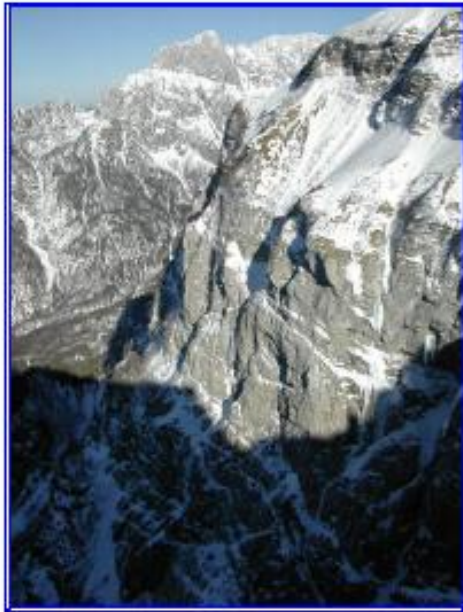
Current Status of Medical Training in Mountain Rescue in America and Europe

Fidel Elsensohn,^{1,2} Thomas Niederklapfer,³ John Ellerton,^{2,4}
Michael Swangard,^{2,5} Hermann Brugger,⁶ and Peter Paa!^{2,7}



AZIENDA OSPEDALIERO-UNIVERSITARIA DI UDINE
S.O.C. Centrale Operativa 118 - Elisoccorso FVG
Direttore dott. Ello Carchiotti
tel. +39 0432 552567 - fax +39 0432 556917 - E-mail:
elisoccorso@arsud.azienda.fvg.it

PROTOCOLLO INTERVENTO SU VALANGA



A CURA DI

Mozzi Daniele
Muchiutti Michela
Piuutti Paolo

Tecnico Elisoccorso e Istr. Naz. UCV- CNSAS
Infermiere Coordinatore Elisoccorso FVG
Comandante Pilota Ellirriulla

Con la supervisione del Direttore del Servizio

Dott. Ello Carchiotti

Protocollo intervento su valanga

1



Practical training





Summary

- Disaster medicine requires a highly organized system
- Mass rescue in extreme environmental conditions such as in the mountain needs to be improved
- Theoretical and practical training and protocols are of paramount importance

A Member of the Consensus Conference on Emergency Cardiac Care and CPR (Dallas 2002) , referring to the tragedy of Sept 11, said:

We do not have to ask ourselves

IF it might happen:

We'll have to ask

WHEN it will happen

Fattori fondamentali che possono migliorare la sopravvivenza dei coinvolti da valanga:

- a. Rapido riconoscimento dell'evento ed attivazione del sistema d'Emergenza 118
- b. Rapida attivazione di tutte le risorse necessarie all'espletamento del soccorso (Elisoccorso, Unità Cinofile, CNSAS, Protezione Civile, Forza Pubblica)
- c. Attivazione del sistema anche solo sulla base del sospetto in relazione all'importanza del fattore tempo sulla sopravvivenza dei sepolti.

VALANGA	MONTE
	VERSANTE
	E' COINVOLTO UN CENTRO ABITATO
	NUMERO PRESUNTO DI COINVOLTI
	CI SONO PERSONE DISSEPOLTE
	UTENTE DIRETTAMENTE COINVOLTO
	ESTENSIONE INDICATIVA DELLA VALANGA
	SI VEDONO TRACCE DI SCI O IMPRONTE IN ENTRATA MA NON IN USCITA DAL FRONTE VALANGA
	I COINVOLTI HANNO L'ARVA

Punti fermi dell'intervento sono:

- a. Chiusura delle comunicazioni radio con la COP nei pressi del target per passare su frequenza 169.8125 CNSAS
- b. Ricognizione aerea del target con bonifica valanga
- c. Sbarco del TE con il suo materiale di ricerca
- d. Sbarco del Medico Rianimatore e dell'ICT nei pressi del fronte valanga in zona sicura con il materiale sanitario necessario
- e. Qualora la prima UC portata dall'Elicottero della Protezione Civile non sia trasportabile direttamente sul fronte valanga dallo stesso causa impossibilità d'atterraggio, 2India provvederà al suo recupero in zona limitrofa concordata tra Piloti ed al suo successivo verricellamento.

FVG LR 1988 n. 27 - Norme sull'osservanza delle disposizioni sismiche ed attuazione dell'articolo 20 della legge 10 dicembre 1981, n. 741 (vedi articoli da 9 bis a 14)

FVG LR 1988 n. 34 - Norme per la prevenzione dei rischi da valanga

FVG DPGR 1989 n. 164 - Regolamento di esecuzione della legge regionale 9 maggio 1988, n. 27: "Norme sull'osservanza delle disposizioni sismiche ed attuazione dell'art. 20 della legge 10 dicembre 1981, n. 741"

FVG LR 1992 n. 15 - Ulteriori norme per la formazione degli strumenti urbanistici e per la programmazione ed attuazione degli interventi regionali di prevenzione dei rischi naturali. Modificazioni ed integrazioni alle leggi regionali 9 maggio 1988, n. 27 e 28 agosto 1982, n. 68 (vedi in particolare articoli 10-13)