

tioning of health care. The health care professions must lead in this regard and provide guidance and assistance as appropriate.

Murray J. Girotti, MD
Chief
Department of Surgery
Victoria Hospital
London, Ont.

[Dr. Emson responds:]

I agree with all but one of Dr. Girotti's opinions. The rationing of health care requires objective data, based as far as possible on outcomes, although we must remember that this is not the only way of assessing the validity of much of our health care. If rationing is to be just and fair the discussion should also involve continuing public input at the grass roots. This is not provided by our current process of representative democracy, by political decision making or by one-off surveys. Oregon has started to blaze a trail in this direction. Regrettably, our politicians are unwilling to follow it: the ministers of health for Alberta and Saskatchewan have both rejected recommendations for regionalization in the reports that they commissioned.

Such decisions should not be loaded onto the doctor at the patient's bedside. To do so produces either intolerable conflict of values or — what is worse — the hypocritical concealment of decisions as to the worth of individuals under a cloak of pseudoscience. We have to find ways of sparing the specific doctor-patient relationship from this strain.

The only point on which I disagree with Girotti has to do with a two-tier health care system. This we have already. Those who can afford it can buy what care they want in the United States. Politicians set us the example. Those who qualify (and who set the qualifications) can go to the (gloriously misnamed) National

Defence Medical Centre. Some are already much more equal than others. At some point Canada has to look honestly at the second tier instead of pretending piously that it does not exist.

Harry E. Emson, MD
Professor of pathology
Royal University Hospital
Saskatoon, Sask.

Snowboarding injuries: an analysis and comparison with alpine skiing injuries

Dr. Riyad B. Abu-Laban's comparative analysis of ski resort injuries provides a timely and very helpful perspective for rescue services at ski resort areas.

Although only a few of the described injuries are likely to have been associated with hypovolemic shock, injury on a mountainside in winter carries a considerable risk of hypothermia. Neither medical condition was identified in this study; however, it is mandatory to assume that any casualty on a mountainside is, in fact, injured twice: once from the mechanism of the trauma and once from prolonged exposure to the elements.

The altitude in the ski areas of Banff National Park, Alta., is at the threshold (approximately 3000 m) at which the clinical syndromes of ill health on high mountains occur¹ but is sufficiently great to markedly reduce physical performance in unacclimatized people. Thus, skiers' self-assessment of their level of conditioning may not reflect their actual fitness in a sport at these altitudes. It may be useful to recall the mandatory period of acclimatization for participants in the 1968 Olympic Games in Mexico. These were held at an altitude almost exactly

the same as that at Sunshine Village, Banff: 2130 m.

The increased incidence of sporting accidents as the day progresses is attributed to fatigue. The Rocky Mountains present longer ski runs, higher altitudes and lower temperatures than are normally encountered in central and eastern Canada and may therefore give rise to a pattern of accidents different from that in eastern Canada; I hope we may look for further studies by Abu-Laban and others.

In the meantime, it is reassuring to know of the exemplary service of the Canadian Ski Patrol System (now in its 51st year). These volunteers are rigorously trained, well equipped and strategically deployed to monitor the safety of skiers and snowboarders across Canada.²

Kenneth Hedges, MB, ChB
PO Box 520
Washago, Ont.
Deputy chief surgeon
St. John Ambulance Brigade

References

1. Hedges KH: Ill-health on high mountains. *J R Army Med Corps* 1974; 120: 158-164
2. *Patroller's Manual*, 8th ed, Canadian Ski Patrol System, Ottawa, 1988

[The author responds:]

I thank Dr. Hedges for his thought-provoking comments. As he says, exposure to the elements is an important consideration in any wilderness emergency.¹ This is perhaps more relevant to activities in the backcountry than to those at a ski resort, where professional or volunteer patrollers can rapidly "package" and evacuate injured people. In Banff evacuation is usually expeditious and involves toboggans, ground ambulances and, occasionally, helicopters. Since avoiding heat loss is a prehospital priority we virtually never see significant hypothermia associated with ski-resort injuries.

As Hedges notes, the maximum ski resort altitude at Banff (2652 m) is in the range in which physiologic changes begin (1500 to 3500 m).² One study of six Colorado resorts (altitude range 2439 to 2896 m) reported that 12% of skiers had three or more symptoms attributable to altitude and were believed to have acute mountain sickness.³ Banff's ski-resort altitudes, though significantly less, on average, than those in Colorado, are clearly sufficient to cause a reduction in maximal exercise performance. However, Hedges's suggestion that this would increase fatigue and thus influence skiing and snowboarding accidents is less certain.

It has been demonstrated that alpine skiing, even at a competitive level, usually involves sub-maximal exertion.⁴⁻⁶ This, combined with frequent rests on lifts, presumably provides a reserve for dealing with any added fatigue from modest altitude. The appropriateness of the analogy to the 1968 Olympics is dubious since a recreational skier probably does not undergo exertion comparable to that of an Olympic athlete; thus, altitude may influence sport performance differently in these two groups. Although no definitive study exists one report notes that altitudes below 3049 m are "of little importance to the average skier."⁷

Fatigue is only one of several factors implicated in the greater skiing accident rates in the afternoons: crowd size, lighting, snow conditions, circadian rhythms, alcohol consumption and glycogen levels in the thigh muscles may change through the day and influence the occurrence and types of accidents.⁸⁻¹¹

I suspect that Hedges is correct that the factors involved in skiing and snowboarding accidents vary between western and eastern Canada; I doubt, however, that altitude itself is a significant contributor to this difference.

There are many differences beyond altitude between western and eastern Canadian ski resorts. Resorts with higher altitudes attract more advanced skiers, who often ski for several days in a row. Increased altitude is also associated with lower temperatures, different snowpack conditions, more variable lighting, fewer trees for visual reference and longer runs. Lower-altitude resorts, conversely, attract more "occasional" skiers, are often crowded and may have more machine-made snow and thus icier conditions. All of these factors may have positive, negative or neutral effects on skiing and snowboarding accident rates. Although some studies exist¹² it is apparent that a comprehensive analysis that controls and assesses each of these variables and their interactions would be difficult.

There is, however, an encouraging downward trend in the Canadian rates of skiing accidents.¹⁰ We should continue to focus attention on the factors that are amenable to change and have been clearly shown to influence the occurrence and types of skiing and snowboarding accidents and injuries.

Riyad B. Abu-Laban, MD
Mineral Springs Hospital
Banff, Alta.

References

1. Morris JA, Swiontkowski MF, Herrmann HJ: Wilderness trauma emergencies. In Auerbach PS, Geehr EC (eds): *Management of Wilderness and Environmental Emergencies*, Mosby, St. Louis, 1989: 223-265
2. Hackett PH, Roach RC, Sutton JR: High altitude medicine. *Ibid*: 1-34
3. Houston CS: Incidence of acute mountain sickness: a study of winter visitors to six Colorado resorts. *Am Alp J* 1985; 27 (59): 162-165
4. Saibene F, Cortili G, Gavazzi P et al: Energy sources in alpine skiing (giant slalom). *Eur J Appl Physiol* 1985; 53: 312-316
5. Niinimaa V, Shepard RJ, Dyon M: Determinations of performance and mechanical efficiency in Nordic skiing. *Br J Sports Med* 1979; 13: 62-65
6. Stiles MH: Medical aspects of skiing.

J Maine Med Assoc 1971; 62 (6): 136-138

7. Idem: Altitude and skiing. *Ibid*: 139-141
8. Tesch P, Larsson L, Eriksson A et al: Muscle glycogen depletion and lactate concentration during downhill skiing. *Med Sci Sports* 1978; 10 (2): 85-90
9. Anderson RE, Montgomery DL: Physiology of alpine skiing. *Sports Med* 1988; 6: 210-221
10. Clark L, Doig P: Ski injuries at Whistler. *BC Med J* 1988; 30: 649-652
11. Winget CM, DeRoshia CW, Holley DC: Circadian rhythms and athletic performance. *Med Sci Sports Exerc* 1985; 17: 498-516
12. Gouter LM, Knipschild PC, Volovics A: Personal and environmental factors in relation to injury risk in downhill skiing. *Int J Sports Med* 1989; 10: 298-301

But how possible is possible?

After waiting almost a year for the review of my book *Informed Consent to Surgery: Everything You Wanted to Know about Your Operation but Were Afraid to Ask* (*Can Med Assoc J* 1991; 145: 1598) I was prepared to read a thoughtful and objective discussion by an experienced and knowledgeable surgeon. Instead, I was dismayed to find a biased attack by someone with a doctorate in philosophy, who allows himself the luxury of psychoanalyzing my motivations.

The first prerequisite of any review should be accuracy about the facts, and the second should be avoidance of personal dogma on matters unrelated to the book's content.

Dr. Arthur Shafer complains that the book simply lists the possible complications of major surgery in an indiscriminate manner. He omits the fact that each complication is described and explained as simply and briefly as possible and that the listing is carefully done to conform with similar listings in standard surgical texts. These texts are acknowl-