has chosen not to publish extensive references or to grade the quality of the evidence available.

- The WMS assumes that at high altitude, clinicians and layman are able to differentiate accurately between high altitude pulmonary edema (HAPE), high altitude cerebral edema (HACE), and severe acute mountain sickness (AMS), whereas the UIAA guidelines do not. Instead, the UIAA recognizes the limited diagnostic skills of the layman and acknowledges that a high altitude physician, whose brain is hypoxic, may also struggle to make an accurate diagnosis! The reality of this is seen most clearly in the UIAA's recommendation to routinely use 3 drugs—dexamethasone, nifedipine, and acetazolamide—in treating these conditions, while the WMS advocates a more tailored approach. Despite this difference I was relieved to see that both organizations agree on the appropriate drug doses for each illness.
- I welcome the WMS decision to include drug treatments that have little or no supporting literature. This may go some way to dispelling the myths that surround the use of agents such as ginkgo biloba and coca. For simplicity, the UIAA had decided not to include such substances. On balance this may have been an error, since hardly a week goes by without unfounded claims for their use being made in the mountaineering media.
- The willingness of the WMS to encourage those with AMS to remain at altitude is an interesting variant from the UIAA guidelines. This, I assume, reflects the expertise and facilities available at some of the highest ski resorts in North America, where evacuation can be arranged at short notice. In some parts of the world this would not be so advisable.
- Quite correctly, all of the prevention and treatment strategies presented by the WMS begin with non-pharmacological strategies, namely, a slow ascent for prevention and a prompt descent for treatment. However, the emphasis on pharmacological interventions makes me feel uneasy. Put simply, the nonpharmacological approach is not stressed enough. This is most clearly seen in the WMS's approach to AMS prophylaxis. Where the UIAA chose not to open this Pandora's box, the WMS has done so and endorsed the use of acetazolamide. When used by recreational and professional mountaineers, as opposed to rescue teams or possibly the military, this raises the complex question of whether we should endorse the use of performance-enhancing drugs in sport. This matter becomes even more complex when pediatric doses are quoted and one has to question the ethics of parental motivation in these cases. Why not simply spend more time and money, going slower and enjoying a non-drug-as-

sisted adventure? I was even more alarmed to see "Rapid Guided Ascent (eg, Mt Kilimanjaro)" listed as "high risk" and therefore justifying the use of acetazolamide. Of course such ascents are "high risk" but only because the guides, who should be responsible for their client's care and education, choose to ignore the basics of human physiology. Is it really the role of the WMS to legitimize this dangerous and unethical practice? Possibly the option of physicians offering firmer guidance on a safer ascent profile, or even using their mountain knowledge to suggest a lower but equally challenging objective, might be more appropriate.

In the future I look forward to greater transatlantic cooperation over the formation of remote medicine guidelines but suspect and trust that we will also enjoy a robust and stimulating discussion along the way.

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References

1. Luks AM, McIntosh SE, Grissom CK, et al. Wilderness Medical Society guidelines for the prevention and treatment of acute altitude illnesses. *Wilderness Environ Med.* 2010; 21:146–155.
2. Health rules for mountaineers. Available at: http://www.theuiaa.org/medical_advice.html. Accessed March 27, 2010.

In Reply to Dr. Hillebrandt

To the Editor:

Dr. Hillebrandt has written a thoughtful letter to the editor in response to the recently released Wilderness Medical Society Guidelines for the Prevention and Treatment of Acute Altitude Illness. We appreciate his praise of the Guidelines and agree wholeheartedly that improved cooperation between the WMS, UIAA, ICAR, and International Society for Mountain Medicine (ISMM) is desirable.

Dr. Hillebrandt presented his opinion about several key differences between the approach taken by the WMS and that taken by the UIAA and ICAR. After careful consideration, we do not agree with some of his comments. We believe that grading the quality of evidence and publishing references is very important, because it allows improved substantiation of recommendations and claims. Readers should have the opportunity to understand the quality of the evidence underlying assertions, be in a position to assess the potential for bias, and be able to access supporting evidence if they so desire.

Motivated learners will seek to understand where evidence is strong or weak in order to make informed decisions about the integrity of data and their application to behavior and therapeutic activities.

Dr. Hillebrandt's concern about hypoxia interfering with a physician or lay person's ability to make accurate diagnoses may apply at extreme altitudes, but is less applicable at lower elevations, such as those of ski resorts in Colorado or the Alps. The UIAA's recommendation referred to by Dr. Hillebrandt to routinely administer 3 drugs (acetazolamide, dexamethasone, and nifedipine) to ill patients at high altitude lacks supporting evidence. Such a recommendation is precisely why we made the effort to review the literature and provide a rationale for therapy based on a more tailored approach. We do not believe that guidelines should be written at the functional level of providers with altered mental status, as Dr. Hillebrandt suggests, particularly given the lack of evidence for hypoxia-induced altered mental status interfering with physicians' judgment at high altitude.

Dr. Hillebrandt criticizes the WMS approach to descent in the treatment of altitude illness. Contrary to his statement, we do not encourage people to remain at altitude. Rather, we present specific circumstances in which remaining at the same altitude, rather than descending, is in our opinion a valid option. Given the prevalence of mild to moderate AMS, routine insistence on mandatory descent to lower elevations, even in remote areas, may lead to inappropriate disruptions of travel plans or premature termination of trips. If individuals who elect to remain at the same elevation know when descent is indicated—a point made in our guidelines—remaining at the same elevation while treating mild to moderate AMS is a reasonable option.

Dr. Hillebrandt also opines that we have placed too great an emphasis on pharmacologic strategies. Our guidelines place appropriate emphasis on the role of slow ascent (which has actually not been well studied at high altitude), but recognize that there are certain situations (Table 3 of the Guidelines) in which slow ascent may either not be feasible or insufficient to prevent altitude illness. We do not seek to legitimize the practices of guides who take their clients up to high elevations at too rapid a rate on Kilimanjaro and other peaks. Rather, we are simply recognizing the realities of what happens in the field and providing travelers with viable alternatives to mitigate risk when they lack other means for doing so.

Ideally, the Guidelines will encourage others to better understand the origins of recommendations for therapies and to be circumspect about the opinions they espouse.

We support the notion put forth by Dr. Hillebrandt that it would be nice to never need to prevent or treat altitude-related illnesses, or to always keep it simple, but that is not reality.

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