

EDITORIAL

Performance-Enhancing Drugs—Commentaries

Editors' Introduction

It is amidst a controversial and unusually dangerous climbing season on Mount Everest that we publish Dr Wagner's editorial "Medical and Sporting Ethics of High Altitude Mountaineering: The Use of Drugs and Supplemental Oxygen." Certain pharmacologic agents have, for many years, been used to prevent acute mountain sickness (AMS), high altitude pulmonary edema (HAPE), and high altitude cerebral edema (HACE), the latter 2 among the greatest medical threats to life for those engaged in mountaineering on 8000 m peaks. These drugs have moved away from their initial purpose as prophylaxis or emergency treatments for life-threatening conditions into a means to impel mountaineers higher on mountains. Both acetazolamide and dexamethasone are currently classified as performance-enhancing drugs (PED) by the World Anti-Doping Agency (WADA). Supplemental oxygen is not on the WADA list, but any substance that artificially enhances the uptake, transport, or delivery of oxygen is. Given these facts, should mountaineers embrace or eschew the use of medications that could be viewed as PEDs? And further, should use of these drugs be officially regulated or restricted by the International Mountaineering and Climbing Federation (UIAA) or by other mountain medicine organizations? As noted by Dr Wagner, these questions raise passionate controversy within the mountain medicine community.

As physicians, our primary goals are to heal the sick and rescue the injured. When we are tasked to treat life-threatening altitude illnesses, there is no question that these drugs should be readily available and liberally given. However, when the primary purpose of these drugs is prevention of altitude illness or to increase the chances of reaching the summit, physicians must prescribe as they believe ethically correct. Similarly, climbers must decide for themselves whether using these drugs in this manner is in accordance with their climbing ethics. This is foremost an opportunity for the physician to engage in a thoughtful and cautionary discussion, not just about the potential benefits of certain medications, but also about the very real risks of using these drugs during mountaineering.

Recognizing that there are widely varying opinions among both mountain medicine experts and climbers as

to the appropriate use of these drugs, we sought responses to the editorial from altitude researchers, climbers, and the clinicians who treat them. We hope to stimulate a dialogue that may ultimately be resolved with an evidence-based position paper or consensus statement from the mountain medicine community regarding the use of drugs and supplemental oxygen in mountaineering. In the meantime, we invite our readers to consider the range of opinions and to draw their own conclusions.^{1–3}

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A Historical Perspective

Dr Wagner's editorial is welcome recognition of the current ethical controversy swirling around the use of "performance enhancers" in the high altitude mountaineering community. Having recently coauthored a project that examines the history of climbing all 14 of the world's 8000 m peaks through 2011,⁴ possessing some personal experience climbing at altitudes exceeding 8000 m, and being a current member of the UIAA Medical Commission, I am familiar with the heated debate surrounding this issue in the high altitude climbing community.

In the process of researching and writing that work, I was astounded by the extent of passion concerning this matter displayed by several of the world's premier extreme altitude alpinists. I soon came to realize that my surprise reflected both my fairly dispassionate health-care oriented view of this debate and my North American-centric view of the mountaineering world. The first of these 2 factors is probably self-explanatory to readers of this Journal, while the latter, I think, requires some explanation. In much of continental Europe, climbing the world's highest peaks captures the public imagination in a way that can only be compared to the attention paid to film actors and athletic stars elsewhere in the world. Ascending 8000 m peaks garners much publicity in

many Asian countries as well, but in parts of Europe—especially the Alpine countries themselves—it is fair to say that Alpine climbing seems to be a part of the national fabric. Extreme altitude climbing is, by comparison, a fringe activity in North America. One has to merely glance at the nationality statistics of those persons who are “officially” recognized as having successfully climbed all 14 of the 8000 m peaks to get a sense of this. Of the 28 persons who had completed this amazing goal as of January 2012, 15 are European, 9 are Asian, 2 are North American, and 1 each hail from the continents of Australia/Oceania and South America.⁴

As Dr Wagner clearly points out, there are distinct pros and cons to the argument regarding the use of performance-enhancing drugs—including supplementary oxygen—at altitude. I will reiterate the argument only so far as to say it might perhaps be summarized as the pro of life-enhancing/life-saving potential of the drug in question versus the con of potential drug misuse or abuse, as well as the ethics surrounding an “aided”—and some would say “unfair”—ascent. But this would not be such a contentious and interesting matter if there did not exist a great many shades of gray in the argument.

Given the high profile and often profitable nature extreme altitude climbing has for its “stars” across much of Europe, it is perhaps not surprising that the International Federation of Sports Medicine (FIMS) and WADA regulations mentioned in Dr Wagner’s editorial are often cited in that part of the world when the issue of drug use at altitude arises. Sure enough, the “style” of the journey has long mattered in the Alpine climbing world, especially for those performing at the highest levels—those ascents done with the fewest so-called aids and support garnering the most style points. But it is also fair to assert here that most alpinists gravitate to the activity in the first instance because it offers an escape from the manmade regulations of competitive athletics. That some try and apply firm FIMS and WADA rules and regulations to an activity that by its very nature seeks to escape from the limits of mankind’s fabricated norms perhaps says more about our human desire to create boundaries and restrictions than anything else.

Given the on-going ethical arguments surrounding the use of supplementary oxygen and various pharmaceutical products at altitude, we might remember that this is, in reality, an old quarrel. It dates back at least to the Everest attempts of the early 1920s.⁵ There were, in fact, some early Everest pioneers who argued that simply carrying the additional weight of supplementary oxygen equipment might well nullify any physiological advantage gained by the gas itself. For sure, the early oxygen equipment was heavy, sometimes unreliable, and could not hold gas at anywhere near present-day cylinder pres-

ures. However, many of the early Everesters who did not think twice about the use of the best available equipment, clothing, and nutrition of that era also did not hesitate to condemn supplementary oxygen as an unfair and unsporting advantage. George Ingle Finch, a member of the 1922 British Everest expedition and an early advocate of supplementary oxygen at extreme altitude, approached such arguments with undeniable logic:

Even someone who is well versed in the theory of “artificial aids” and has worked through its logical aspects will find it difficult to understand this group’s [the oxygen opponents] arguments. The first illogical reasoning is that its members have accepted other aids, which we have gained from scientific research and with which we are able to avoid painful or damaging effects to the human body, especially in the mountain climbing world. No one takes offence at the fact that we wear special garments to combat the cold; no one denies the importance of thermos bottles, which, especially on this mountain, have almost life-saving status; no one opposes the fact that we use stimulants or specifically designed foodstuff, providing both strength and energy; no one takes exception to the use of snow goggles to protect the eyes from the sun’s ultraviolet radiation and the extreme cold of the piercing winds; and no one criticized the use of caffeine to invigorate an exhausted climber. In short, if scientific research were to produce oxygen in easily ingestible tablet form, one can be sure that not a soul would oppose its use so violently during the climbing of Mount Everest . . .^{6,7}

Finch’s suggestion that “if scientific research were to produce oxygen in easily ingestible tablet form, one can be sure that not a soul would oppose its use” has, in essence, become an authentic concern for modern alpinism. Alpinists who criticize the use of supplemental oxygen may use (for instance) dexamethasone, acetazolamide, or sildenafil as an illness prophylaxis/performance enhancer without a second thought. Others clearly feel that these sorts of pharmaceutical products are, like supplementary oxygen, “doping” to the extent that they aid ascent. Nonetheless, such drugs are now in common use not only to appropriately treat high altitude illness, but also to allow alpinists to ascend higher, faster. Concerns surrounding potential misuse of these drugs in this arena are legitimate—the world’s highest peaks are not an especially safe environment for personal drug “experimentation.” As I reflect on the possibility mentioned in Dr Wagner’s editorial that the practice of optimal drug use at altitude might become more formalized by some agreed consensus involving the UIAA and major sports and mountain medicine organizations, I am unfortunately reminded of how difficult it can be to get a consensus agreement within a single organization, let alone across a half dozen different international organizations! But I

applaud his forward thinking on the matter; perhaps it is time to attempt to move in this direction.

Regardless of those who might, for instance, continue to condemn supplementary oxygen as too artificial while digging deep into their medication supply for other potent performance enhancers, it is interesting to ponder the ethics surrounding this matter from a historical point of view. The benefits that present-day extreme altitude climbers enjoy in the way of sophisticated food, clothing, equipment, and knowledge of altitude physiology is without doubt worlds away from that available to the early Himalayan pioneers. As such, we might all do well to reevaluate our definition of “enhanced” or “artificial” in the context of what we today take to the high Himalaya that allows us to survive and climb with a quality that would have been unimaginable for those who first probed the outer limits of the earth’s highest places in the early 20th century.

George W. Rodway, PhD, APRN

High Altitude: By Any Means?

The issue of drugs and high altitude performance is a complex topic of several overlapping pairs of topics: oxygen and drugs, performance and health, and competition versus recreational climbing.

First, let us discuss competition and recreational climbing. Climbing in the high mountains has evolved into the realm of elite climbers who are trying to bag the highest peaks in the fastest time with no assistance. Climbing is not an Olympic event, and there are no regulatory agencies to monitor how these climbs are done, namely, with or without drugs that may optimize performance. I addressed the use of drugs in a previous paper,⁸ but the drugs for discussion are usually dexamethasone, acetazolamide, erythropoietin, and amphetamines, although there may be many others. Until or if there is any regulatory agency to monitor the use of drugs, the issue is a moot point. Climbers will use whatever they can get away with to succeed. Mountaineering has, for decades, been a renegade activity. Those persons who are talented are free to take the risks inherent in supplementary assist, but one wonders whether this is by “fair means.”

In this same discussion arises the use of oxygen. Like the 4-minute mile or the first ascents of Everest, once these feats are accomplished, then the standard is set higher. Theoretically, no one should use supplemental oxygen since it has already been done without, but as is obvious, all the guides and clients on Everest for the past couple of decades use supplemental oxygen. This use is to optimize safety, enhance guides’ performance and decision making, and improve chances of ascending the

world’s highest peak. But is this really climbing Everest, or a false peak that is physiologically at an altitude some thousand or more meters lower? Additionally, the use of oxygen in large guided groups requires more money and imposes a much greater risk to the climbing support teams (high altitude Sherpas), not to mention the debris left by less responsible teams. My contention that Everest should be climbed without supplemental oxygen will also be a moot point, as a great deal of money is on the line to support the tourist climbs.

The next issue has to do with the use of drugs to optimize safety and performance. These drugs avoid or minimize the incurrence of high altitude illnesses such as AMS and HAPE and HACE. This issue becomes a tangle of discussion. Clearly, we want climbers to remain safe and healthy. Prudent use of medications can minimize the chances of having AMS, HAPE, or HACE, but crossing the line with indiscriminate use of drugs like dexamethasone opens up the discussion of ergogenic aids versus medical safety.

I am in full support of judicious use of drugs to minimize the development and optimize the treatment of altitude illnesses or to facilitate a descent during a rescue. But to recommend large doses of drugs like dexamethasone is irresponsible and dangerous.

As mentioned in my earlier paper, there is something distasteful about having a healthy, albeit weak client, injected with dexamethasone to assist in the ascent or descent of these high peaks. Using such drugs to maximize a climber’s safety and survival on descent is an acceptable use. But to have one ingesting high doses of these steroids on the ascent merely to enhance performance (which these drugs may do) verges on the murky margin of cheating.

In summary, I side with those elite climbers who ascend 8000 m peaks without oxygen, by fair means, with the availability of drugs in their backpack to assist if they become sick and need assistance in rescue. It will not be possible to control these drugs as potential ergogenic aids because climbing is not, nor should be, a regulated competitive sport. As for the recreational climbers, whose skills may range from that of a fit but inexperienced client to that of outstanding international yet recreational climbers who have other professional lives, the knowledge of how to use medications appropriately to help prevent or treat altitude illnesses that can be fatal is medically judicious.⁹

Robert B. Schoene, MD

A Practical Perspective

The ethical aspects of the use of drugs and supplemental oxygen in high altitude medicine initially confused me until I figured it out this way. Competition climbing is governed by WADA; for recreational pursuits like trekking and mountain climbing, WADA can make recom-

mendations if it wishes, but adults will ultimately make their own choices.

As physicians and health professionals, I think we should make it clear to people that we don't advocate the use of drugs in the mountains for climbing faster and higher. For people who come to seek advice, we should make the indications and contraindications for Diamox (acetazolamide), dexamethasone, calcium channel blockers, Viagra (sildenafil), and so forth, very clear and let people make up their own minds about using these drugs.

In the West, physicians may be able to control the use of these drugs by not prescribing them, but in the developing world where many of these mountains are situated, all of these drugs can be bought over the counter without a prescription. Crucially, we should emphasize that gradual ascent will help prevent many problems related to high altitude illness and drugs may not be necessary. But we have to be realistic and know that this advice may fall on deaf ears because people are so determined to climb higher and faster.

Regarding the use of supplemental oxygen in the mountains, many climbers are unaware that not using supplemental oxygen is potentially fraught with danger. As health professionals, we need to clarify this issue because many climbers may have a romantic notion about climbing mountains and be caught up in the frenzy of climbing without supplemental oxygen. After clearly understanding this danger, climbers then can make up their own minds. I think that using supplemental oxygen to climb the high Himalayan peaks is similar to using modern climbing boots and jackets to protect ourselves from hypothermia. Supplemental oxygen protects us from hypoxia.

Buddha Basnyat, MD

View From the Trenches

The editorial by Dr Wagner brings up the most frequently discussed topic on Everest this past spring. To say that the idea of taking PEDs (oxygen, dexamethasone, nifedipine, acetazolamide, phosphodiesterase-5 inhibitors) is "gaining acceptance" is to put it mildly—the idea is out in the popular press, and climbers not only know about it but are also acting on the information in large numbers. After being asked to comment on the use of PEDs in mountaineering, I chose first to discuss it with our Everest ER volunteer physicians, then to enlist their help in taking the question to the tents. During the spring 2012 Everest season, we gathered the thoughts of everyone from expedition doctors to elite professional climbers to commercial guides to the least experienced climbers in camp. As expected, the discussion ran the gamut, from strong steadfast opinions for or against, to a con-

tradictory and sometimes confusing combination of both. The more the subject was discussed, the muddier the discussion became. Use of oxygen (because it does not require a physician prescription for mountaineering use in Nepal) caused considerable debate, and we suppose it always will.

Several professional climbers voiced the opinion that oxygen "brings the mountain down" and that its use makes a summit claim questionable. Others felt similarly, but added that their opinion changed with the added responsibility of guiding a client. These guides stated that they tended to not use oxygen on their own quest, but thought that guiding a client without using supplemental oxygen themselves was irresponsible.

We estimate that during our informal survey on Everest spring 2012, at least two thirds of climbers were prescribed several PEDs and had intent to use them not for rescue, but to increase their chances of summit success. A commercial guide of a large expedition asked our staff to counsel their team on use of PEDs for summit day. We were alarmed to find a tent full of anxious climbers with pockets full of prescription drugs (prescribed by their Western physicians and filled at home pharmacies) and with no understanding or instructions on when and how to use them. In several camps, commercial guides reported they were being asked by their clients to give them clear instructions about when and how to take these drugs. Who are the health care providers writing these prescriptions? We have a duty to provide education and specific instructions about how and when these potentially dangerous drugs should be used. To write a prescription for dexamethasone or nifedipine to use "as directed" without further instruction is not only irresponsible, but also the results can be potentially tragic.¹⁰

One climber told us he had chosen not to use oxygen for his summit attempt, but was preparing to use dexamethasone on summit day "because my doctor prescribed it." This choice confused us. In other sports, prescription or not, a PED is a PED, but not in the opinion of this specific climber. We wonder if the physician who prescribed his dexamethasone knew the weight of his endorsement? Could this climber's summit success be challenged because of the use of dexamethasone? In the record books, why would oxygen use differ from use of a pill?

I am on the purist end of the spectrum of this argument. When I am asked whether I will climb Everest, I reply no, because I will not climb with supplementary oxygen (and I am not an athlete who could dream of an attempt on the tallest mountain in the world without it). But I do scuba dive, I use scopolamine at sea, and I have prescribed prophylactic medication to climbers who I

thought were in harm's way, so I am capable of rationalizing my way out of a hard line position. I believe that PEDs should not be used for most climbers (who in our experience have a hard time making safe, educated decisions about the use of potentially dangerous medications—that is why they are prescribed!). Circumstances and compelling conditions may shake my resolve in some cases, but only after careful consideration and specific detailed education and instruction for the climber. I am trained to prevent illness, but like most health care providers, am not prepared to counsel a patient about performance enhancement. I encourage responsible prescribing. I believe that the oxygen debate is best left to the mountaineering community.

Luanne Freer, MD

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