New Rescue Gear

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In avalanche classes we teach four critical variables to evaluate the avalanche hazard: terrain, weather, snowpack and the human factor. We teach our students to ask questions like:

1) Is the terrain steep enough to produce a slide? If so what are the consequences?
2) Is the weather contributing to instability? Did it snow 3ft last night?
3) Does the snowpack have the right ingredients for an avalanche?
4) Is our group of riders capable of making an objective assessment?

The 5th topic we cover is avalanche rescue in case all goes wrong and someone is caught. Avalanche rescue is a time critical task requiring proper training, practice, and gear. Training comes from the avalanche class, practice is ongoing, and the gear includes a beacon, probe and shovel. These items should be carried by every person in a small pack designed specifically for the job.

While a beacon, probe and shovel have been the standard for years, a fourth item is emerging: the avalanche air bag, and snowmobilers have been leading the way among backcountry users in adding air bags to the list of required rescue gear. In southwest Montana we have seen their use steadily rise, and they have been a hot topic in SnoWest forums. Avalanche air bags are brightly colored, inflatable air bags deployed from special backpacks. Ideally you can pull the ripcord and float on top of the avalanche. Unfortunately avalanches don't work this way. They don't flow like water; they flow like granular media. What this means is that avalanches work like a can of mixed nuts. When you shake the can, the biggest nuts come to the top. In a similar manner bigger items like snowmobiles, and people with air bags, often end up near the surface of avalanche debris. This doesn't mean someone with an air bag will always be on top, but they will be near the surface. Sometimes folks deploying air bags avoid burial, but sometimes they are partially buried, and we can't assume an air bag will prevent major trauma from hitting a tree. However, we can assume our partners will quickly find us by spotting the brightly colored air bag.

Researchers in Europe studied 752 avalanches in Switzerland (1990-2000 and 2002-2003) and Austria (1998-2004) and found that people with air bags had a 16% better chance surviving an avalanche than people without air bags. This same study also compared avalanche victims with and without beacons, and came to the logical conclusion that people with beacons had better chances of surviving than those without beacons.

The primary goal in avalanche rescue is to uncover the victim as fast as possible. After 15 minutes the chances of survival drop to 30%. If you get caught in an avalanche and are able to deploy an air bag, you may end up buried just deep enough that you cannot breathe, but your partners will likely spot a portion of you air bag. They will not waste time pulling out their beacons; instead, your partners will race to your location and furiously dig you out in minimal time. While this technology looks promising, it has its limitations. Several riders successfully deployed air bags in avalanches last season in southwest Montana, but several riders did not. One near Cooke City had the ripcord break when he attempted to deploy his air bag, and it did not work. Another very experienced rider in the Gravelly Range was unable to deploy his air bag before getting buried.

Fortunately data from the Swiss study and anecdotal evidence from southwest Montana show that in many cases air bags work very well. I'll be wearing one this year, but I'll also have my beacon on just in case. Currently many local motorsports shops offer air bag packs and vests from several manufacturers:

ABS Systems
Avi Vest
Snowpulse
Backcountry Access – due out late December

Each has advantages and disadvantages, but all of them are worth investigating.