

## Managing Cardiac Arrest at Vail Ski Area – A Unique Environment

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Preparing and responding to sudden cardiac arrest (SCA) in any community is challenging. Implementing various response components, including community readiness, bystander CPR, public access defibrillation, high quality resuscitation, advanced and tertiary care and data utilization each contribute to more favorable patient outcomes. But what about SCA on a remote ski mountain at 11,000 feet in a snowstorm? Such is the case at Vail and Beaver Creek Ski Areas in Eagle County, Colorado. For the past 10 years, the professional ski patrols have partnered with local agencies to better prepare for and respond to sudden cardiac arrests on the mountain. These two world-class ski resorts can have as many as tens of thousands of skiers per day on the mountains, especially during busy holiday periods.

So how exactly do ski patrols respond to a SCA on the mountain? Typically, if someone collapses while skiing (or at one of the many on-mountain restaurants), a witness will call 911 or ski patrol dispatch. If 911 is called, the Vail Public Safety Communications Center will transfer the call to Vail Ski Patrol Dispatch and simultaneously provide telephone CPR instructions. Ski Patrol will dispatch multiple patrollers under a “Cardiac Dispatch” Protocol with each team member having a clear



understanding of their role within the pit crew resuscitation model. Ski Patrol Dispatch will also attempt to locate one of 15 skiing paramedics and physicians by radio to respond. Ski patrollers work to quickly begin or continue high-quality CPR and expose the patient’s chest for the AED, which can prove difficult under multiple layers of ski clothing. If available, a paramedic or physician arrives and provides ALS care. Ski Patrollers are trained and authorized to place a supraglottic airway. ALS care usually includes establishing vascular access, EKG interpretation, and ACLS medications. The patient is then placed into a dual rescue toboggan, AKA “cardiac rig” (pictured above), and skied by three ski patrollers to the base of the mountain where care is transferred to Eagle County Paramedic Services for transport to Vail Health Hospital, a short distance away. Vail Health Hospital is a Level 3 Trauma Center but also has something entirely unique in a ski town, an interventional cardiac catheterization lab under direction of cardiologist Dr. Jerry Greenberg. “I think we might be the only cath lab at the base of a major ski resort in the United States. We have had some great patient outcomes because of the teamwork from the ski patrollers all the way to the cath lab,” said Dr. Greenberg, who also serves as a medical advisor to Vail Ski Patrol.

Eagle County Paramedic Services began participating in the CARES Program in 2016 under the support and partnership of Starting Hearts (<https://www.startinghearts.org/>), a local non-profit founded by Lynn Blake, herself a SCA survivor. Starting Hearts is dedicated to making Eagle County prepared for SCA through public access defibrillation and their innovative “*Call.Push.Shock*” CPR training program. Starting Hearts further partnered with Vail and Beaver Creek Ski Patrols to place 10 additional AEDs in strategic locations, such as remote ski lifts, to better prepare the mountains for SCA. Brice May, Director of Vail Ski Patrol, developed a “Guerilla CPR” program where ski patrol trainers “crash” staff meetings at the resort and provide CPR and AED training. Mr. May estimates that over 4,000 people have been trained to date. And it’s working. Through CARES data analysis, Eagle County is recognizing that it has approximately 12% overall survival from SCA, but that the survival rate at Vail and Beaver Creek Ski Resorts during the 2016-2019 ski seasons was an outstanding 50% (4/8). Eagle County is using CARES data as an integral part of its SCA preparedness. CARES has been key to our understanding of why SCA patients do better at the ski resort than the overall community. We strive to get even better everywhere.