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Tactical Medical Mining Rescue - a new and validated approach to close the gap of lacking advanced emergency treatment in the mining industry

Background

The structural changes of Mining in developed countries impose the potential for medical emergencies that are not adequately handled compared to emergencies in the public. Further, rescue times in mining are prolonged and public medical resources are not available due to equipmental and atmospheric challenges. Hence, injured workers are prone to a structural disadvantage compared to the public.

Objectives

TMR is designed to train mine rescue brigade lay people to cover medical emergencies in mining on an advanced level and prevent further deterioration until handover to professional public rescue.

Materials and Methods

A fully new standardized and condensed tactical medical approach was developed including specifically adjusted equipment, and was taught in a didactically optimized way within 16 lessons in 2 days. Objective Structured Practical Examinations (OSPE) using manikins and simulated patients were conducted and compared to the identical exam of the reference group, which consisted of advanced paramedics. The standardized tactical medical scheme includes vital functions and body checks, advanced life support, nasal and intraosseous drug application, supraglottic airway management, artificial ventilation, thoracocentesis, bleeding control including tourniquet, fracture repositioning and splinting, transport bedding and thermal preservation. In OSPE competency evaluation, the trained mine rescue men scored equally compared to advanced paramedics, but higher than basic German paramedic level ($p<0.001$).

Results

The developed Tactical Medical Mining Rescue (TMR) concept was included in the German guidelines for mine rescue services in 2022 and is already implemented in many companies in Germany and several international projects. Each course is validated and statistically compared to ensure a stable and standardized competency level.

Conclusion

After a 2-day-course (www.tmr-kurs.com) and a yearly 1-day refresher, mine rescue brigades can achieve a competency level that is comparable to advanced paramedics level in the spectrum of competencies addressed. The developed approach with specialized equipment ensures coverage of typical mining emergencies, but bears limited oxygen supply in case of longer missions, that must be addressed depending on the site conditions. With regular training, medical lay people can be trained to deliver a publicly acceptable treatment level comparable to advanced paramedics and thus close the gap towards an equal medical emergency rescue in mining, compared to the public.