**Supplemental Digital Content 1. Written equations to predict AMS severity, prevalence, and grade of severity over a wide range of altitudes in both sexes for both low and high activity groups**

|  |  |
| --- | --- |
| INPUTS | Exposure Time: T (hr)Altitude: ALT (km)Activity: ACT (low=0, high=1)Sex: SEX (female=0, male=1) |
| TRANFORMATIONS/ CONSTANTS | Centered Time: CT (days)CT=(T-20)/24e=2.718 |
| AMS Severity Prediction(AMS-C Score) | AMS-C= e[-4.55 + (CT\*-0.66) + ((CT^2)\*1.82) + (ALT\*1.03)+ (ALT\*CT\*0.18) + (ALT\*(CT^2)\*-1.11) + (ACT\*0.09) + (ACT\*CT\*0.37) + (ACT\*(CT^2)\*0.55) + (SEX\*0.33) + (SEX\*CT\*-0.16) + (SEX\*(CT^2)\*-0.94)]  |
| AMS Prevalence Prediction (%) | AMS logit=-[7.04++(CT\*-4.11)+(CT^2\*-2.74) + (ALT\*1.69)+(ALT\*CT\*1.07)+(ACT\*0.54)+(ACT\*CT\*0.39)+(SEX\*0.50)+(SEX\*CT\*0.21)+(SEX\*(CT^2)\*-1.29)]AMS Prevalence (%) = e(AMS logit)/1+ e(AMS logit)  |
|  AMS Severe Prediction(logit 1) | logit 1 = [-10.66+(CT\*-3.79)+(CT^2\*-3.03)+(ALT\*1.82)+(ALT\*CT\*0.93)+(ACT\*0.55)+(ACT\*CT\*0.39)+(SEX\*0.57)+(SEX\*CT\*0.22)+(SEX\*(CT^2)\*-1.66)] |
| AMS Moderate+Severe Prediction (logit 2) | logit 2 = [-9.04+(CT\*-3.79)+(CT^2\*-3.03)+(ALT\*1.82)+(ALT\*CT\*0.93)+(ACT\*0.55)+(ACT\*CT\*0.39)+(SEX\*0.57)+(SEX\*CT\*0.22)+(SEX\*(CT^2)\*-1.66)] |
| AMS Mild+Moderate+Severe Prediction (logit 3) | logit 3 = [-7.46+(CT\*-3.79)+(CT^2\*-3.03)+(ALT\*1.82)+(ALT\*CT\*0.93)+(ACT\*0.55)+(ACT\*CT\*0.39)+(SEX\*0.57)+(SEX\*CT\*0.22)+(SEX\*(CT^2)\*-1.66)] |
| Severe Grade AMS Prevalence (%) | e(logit 1)/1+ e(logit 1)  |
| Moderate Grade AMS Prevalence (%) | (e(logit 2)/1+ e(logit 2)) – (e(logit 1)/1+ e(logit 1)) |
| Mild Grade AMS Prevalence (%) | (e(logit 3)/1+ e(logit 3) ) - (e(logit 2)/1+ e(logit 2)) |

\*Use of sample equations for calculation of AMS severity, prevalence and grade of severity for commercial use are subject to patents pending