High Altitude Medicine

Description:

- Understand physiological adaptations to high altitude.
- Observe assessment and management of altitude-related illnesses.
- Assist in monitoring vital parameters in high altitude settings.
- Observe use of oxygen therapy and acclimatization protocols.
- Participate in evaluation and management of conditions like AMS, HAPE, and HACE.
- Be a part of the medical team during daily rounds and patient care activities.
- Gain exposure to emergency response and evacuation procedures in high altitude environments.

Modules:

High Altitude Medicine for Undergraduate Medical Students:-

Adventure sports attract an increasing number of participants now. Easy accessibility to mountains means that more people travel to high altitudes and ascend rapidly without proper acclimatization leading to preventable morbidity and mortality. A comprehensive 6-week high altitude medicine program for undergraduate medical students can be structured into three phases: foundational classroom learning, applied laboratory sessions, and a 10-day practical mountaineering expedition, ensuring both scientific comprehension and hands-on experience[1][2][3].

Program Overview:

The program will address major topics such as altitude physiology, acclimatization, altitude-related illness, mountain emergency medicine, environmental challenges, wilderness health, and expedition planning[4][5][6]. The final third of the program will immerse participants in a guided mountaineering experience, consolidating theoretical learning through field application[1][3].

Week-by-Week Structure:

Week	Core Theme	Teaching Methods	Focus Areas
1	Fundamentals of High Altitude Medicine	Lectures, Seminars	Altitude physiology, acclimatization, epidemiology
2	Pathophysiology and Prevention Strategies	Lectures, Group Discussions	AMS, HAPE, HACE, hypothermia, frostbite, snow-blindness, HA and the brain

3	Clinical Skills & Case Management	Workshops, Simulations including use of Gamow bag	Assessment/diagnosis, first aid, medical kit prep
4	Expedition & Wilderness Medicine	Workshops, Peer Teaching	Risk assessment, logistics, rescue, cold/water injuries
5-6	Mountaineering Experience (Expedition)	Guided field training	Mountain navigation, field clinics, hazard evaluation, emergency response, team leadership under altitude stress

Key Components:

Classroom and Workshop Modules (Weeks 1–4)

- Lectures on altitude physiology, acclimatization, and pathophysiology
- Workshops on diagnosis, first aid and treatment of high altitude-related illnesses
- Seminar on psychological and social challenges during expeditions
- Laboratory sessions simulating hypoxia and cold stress[5][6][1]
- Preparation and packing of medical kits and personal trekking gear

Mountaineering Expedition (Weeks 5–6)

- 10-day trek to a Himalayan peak or similar location, led by certified instructors and medics[1][3]
- Students rotate roles as team leaders and on-site clinicians
- Practical exercises in triage, emergency care, simulated evacuation, and leadership during medical crises
- Daily debriefs and reflective learning on medical scenarios encountered

Sample Topics

- Physiological effects and adaptation: hypoxia, acclimatization, fluid/electrolyte balance[4][7]
- Acute and chronic altitude illnesses: AMS, HAPE, HACE, thromboembolic disorders
- Mountain injuries: fracture management, wound care, cold/heat exposure, GI, ophthalmic, and psychiatric emergencies[1]
- Planning expeditions: risk stratification, nutrition, hydration, pre-expedition screening, community health[3]
- Medical leadership and communication in remote scenarios

Assessment & Certification

- Logbooks for practical activities and reflections
- End-of-course examination and practical assessment (case simulations and skill stations)
- Certificate of completion endorsed by faculty or partner institute[5][8][3]

This curriculum blends didactic and experiential learning, equipping future medical professionals with a robust understanding of high altitude medicine and firsthand skills essential for care in extreme environments[1][3][5].

References

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