

CENTER FOR AEROSPACE AND HYPERBARIC MEDICINE

Mission

The Center for Aerospace and Hyperbaric Medicine provides education, research and patient care focused on human function in altered ambient-pressure environments.

Vision

The Center for Aerospace and Hyperbaric Medicine will:

- Enhance education for medical, academic and aviation communities through tailored, cost-effective instructional programs encompassing the full spectrum of altered ambient-pressure;
- Facilitate expansion of human activity in altered ambient-pressure environments through innovative research and development on pressure-mediated phenomena of medical and occupational significance to humans;
- Provide hyperbaric oxygen therapy and clinical aerospace medical services for Tulsa and the northeast Oklahoma region; and
- Maintain resources, unified facilities and expertise to serve as a national resource for education and research encompassing the full spectrum of altered ambient-pressure environments.

Core Values

Excellence – We seek excellence in all our endeavors, and we are committed to continuous improvement.

Integrity – We are committed to the principles of truth and honesty, and we will be equitable, ethical, and professional.

Service – We believe that serving others is a noble and worthy endeavor.

Intellectual Freedom – We believe in ethical and scholarly questioning in an environment that respects the rights of all to freely pursue knowledge.

Diversity – We respect others and value diversity of opinion, freedom of expression, and other ethnic and cultural backgrounds.

Stewardship of Resources – We are dedicated to the efficient and effective use of resources. We accept the responsibility of the public's trust and are accountable for our actions.

Strategic Goals, Critical Success Factors, Objectives and Strategies

Goal One. Concurrent activity in all six areas of mission matrix.

Critical Success Factors:

- Aerospace physiology training course for general, corporate or commercial aviation personnel twice monthly.
- Six upper-class medical students in elective aerospace and hyperbaric medicine rotation per year.
- Two post-graduate resident physicians in elective wound care and hyperbaric medicine rotation per year.
- Continuing medical education training program in hyperbaric medicine for chamber technicians, nurses and physicians once per year.
- One or more external-funded, basic or applied research projects per year.
- Hyperbaric oxygen treatment for six or more patients daily.
- One or more aerospace medical patient consultations a week.

Objectives:

Objective 1.1: Qualified technical staff to support safe operation of pressure chambers and optimal patient care.

Strategies:

- Four full-time, hypobaric qualified and hyperbaric certified chamber technicians
- Part-time technical staff as needed for cost-effective operations.
- Hyperbaric nurse through contract agreement with Tulsa Wound Care Clinic.
- Full-time administrative assistant.
- Part-time clerk for medical billing and records.

Objective 1.2: Professional staff leaders in hypobaric and hyperbaric focus-areas.

Strategies:

- Doctorate-level aerospace physiologist or residency-trained aerospace medicine physician to lead hypobaric operations.
- Board-certified hyperbaric medicine physician to lead hyperbaric operations.

Objective 1.3: Maintain facility, pressure chambers and equipment to support activity in all areas of mission matrix.

Strategies:

- Facility maintenance/improvements through agreement with Tulsa Technology Center (TTC).

- Lecture and classroom facilities use through agreement with TTC.
- Programmed maintenance operations and upgrades.
- Maintain certifications/approvals for patient care and human research.

Objective 1.4: Expand aerospace physiology training program.

Strategies:

- Expand to state and regional academic flight programs.
- Ensure program and course flexibility to meet needs of corporate and commercial aviation communities.
- Marketing to enhance visibility and improve outreach targeted aviation communities.

Objective 1.5: Establish elective, upper-level medical student rotation in hyperbaric and aerospace medicine.

Strategies:

- Develop course curriculum to provide value-added educational experience.
- Collaborate with community Aviation Medical Examiners, OSU Department of Family Medicine and Tulsa Wound Care Clinic.
- Maintain course approval at OSU College of Osteopathic Medicine.

Objective 1.6: Establish elective clinical rotation in wound care and hyperbaric medicine for postgraduate physician resident trainees.

Strategies:

- Development course content to augment clinical training experience.
- Collaborate with Tulsa Wound Care Center for optimal clinical experience.
- Maintain OSU College of Osteopathic Medicine and American Osteopathic Association approval.

Objective 1.7: Continue ongoing research program.

Strategies:

- Publish results of all completed research projects.
- Complete currently funded research projects.
- Participate in planned collaborative altitude study with US Army Research Institute of Environmental Medicine and US Air Force Academy.
- Apply for funding of planned future research projects.

Objective 1.8: Activate hyperbaric oxygen treatment program.

Strategies:

- Finalize contract agreement with Tulsa Regional Medical Center (TRMC) for billing purposes.
- Establish computerized billing capability and medical record system with TRMC.
- Obtain transcutaneous oxygen monitor.

Objective 1.9: Establish hyperbaric medicine training programs.

Strategies:

- Establish on-site training course for certified hyperbaric chamber technicians in collaboration with TTC.
- Establish combination "on-line/on-site" continuing medical education course in hyperbaric in collaborate with Telemedicine Department and the International Hyperbaric Medical Association.

Goal Two. Develop and maintain stable financial base to support core mission programs and underwrite service activity.

Critical Success Factors:

- Faculty/staff salaries and baseline operations supported by extramural revenue.
- Clinical hyperbaric oxygen therapy generates 75-90% of baseline funding.
- Diverse revenue streams from aerospace medicine activity make up 10-25% baseline funding.
- Research activity supported through extramural funding sources.
- Hyperbaric medicine training programs fully funded by course tuitions/fees.
- Medical student and resident physician elective rotations funded out of base revenue stream as service activity.

Objectives:

Objective 2.1: Maintain consistent baseline revenue stream sufficient to support core staffing and maintenance operations.

Strategies:

- Volume of hyperbaric oxygen therapy increased to provide majority of baseline revenue within one year.
- Aerospace physiology and flight simulator training provide increasing additional source of revenue as aviation industry recovers.
- Hyperbaric medicine training programs a consistent, minor revenue source.

Objective 2.2: Maintain minimum facility overhead expense.

Strategies:

- Continue shared resource agreement through participation in Tulsa Aviation Education Alliance.

Objective 2.3: Research activity supported by extramural funding.

Strategies:

- Exploit unit capability for basic, applied and clinical research projects to access diverse funding opportunities.
- Professional staff/faculty have responsibility to develop funded research program.
- Initial project development for funding applications can be supported through core operating budget.

Objective 2.4: Aerospace physiology training courses generate revenue by course tuition fees.

Strategies:

- Maintain tuition fees appropriate for cost-effective service to clients.
- Establish contracts/agreements with corporate and commercial aviation to facilitate service delivery.
- Flexible course content and delivery targeted to specific client needs to strengthen "brand" loyalty.
- Effective, targeted marketing /outreach necessary to extend program to regional and national corporate and commercial aviation communities.

Objective 2.5: General Aviation Trainer (GAT II) generates revenue through course tuition and flight-simulator use fees.

Strategies:

- Obtain FAA certification to provide creditable flight-simulator training hours under Title 14 CFR, parts 61 and 141.
- OSU flight instructors supervise creditable flight-simulator training hours.
- Non-creditable, practice simulator hours at reduced fee.
- Visual-spatial disorientation training supported by course tuition fees.
- Local targeted marketing necessary.

Objective 2.6: Hyperbaric medical training certification courses supported through course tuition fees.

Strategies:

- Course content combination of telemedicine and on-site segments provides cost- and time efficient training for clients to encourage brand loyalty.
- Chamber technician courses offered in collaboration with Tulsa Technical Center.
- Initial course development supported by core operation funds.
- Local and national targeted marketing and outreach necessary.

Objective 2.7: Programmed marketing activity to support revenue-generating activities.

Strategies:

- Target marketing strategies and evaluate effectiveness.
- Marketing and outreach campaigns coordinated through OSU and collaborating institutions.
- Upgrade web site and maintain for effective outreach and marketing.

Objective 2.8: Elective rotations for medical students and resident physicians supported through core funding as service activity.

Goal Three. Achieve national recognition as a center of excellence in education; research; and patient care programs encompassing full spectrum of altered ambient-pressure environments.

Critical Success Factors:

- Attainment of Underwater and Hyperbaric Medicine Society unit certification for clinical hyperbaric medicine.
- Organizational membership and participation in University Aviation Association and National Business Aviation Association.
- Established an association of academic aerospace physiology training programs.
- Established consortium for academic institutions with high altitude research facilities/programs.
- Hyperbaric training programs recognized by Underwater and Hyperbaric Medicine Society and International Hyperbaric Medical Association
- At least one peer-reviewed research publication a year for each faculty member.
- Faculty member participation in interest focused professional organizations and societies.

Objectives:

Objective 3.1: Maintain all pressure chambers to provide access to full-spectrum of altered ambient pressure environments in single location.

Strategies:

- Programmed maintenance and upgrade of chambers.
- Upgrade research altitude chamber ventilation, climate control and "pass through" air lock capabilities
- Coordinate with Tulsa Technology Center for facility maintenance and improvements to improve patient care and instruction.

Objective 3.2: National-caliber faculty researchers in hypo- and hyperbaric focus areas.

Strategies:

- Recruit doctorate-level aerospace physiologist or board certified aerospace medicine physician with demonstrated research record/potential.
- Recruit board-certified hyperbaric physician with research record/potential.

Objective 3.3: Develop and maintain collaborative relationships with institutions possessing expertise and resources needed to expand the scope of research.

Strategies:

- Identify and collaborate with regional institutions having technical expertise and resources for genomic and proteomic expression studies.
- Maintain collaborative relationship with US Army Research Institute of Environmental Medicine to facilitate studies of human response to high terrestrial altitude using the Army research facility on summit of Pikes Peak, CO.
- Collaborate with Dr. Barry Braun at University of Massachusetts Amherst and Dr. Anne Friedlander at the Palo Alto VA Health Care System to continue studies of control of energy metabolism in altered ambient pressure environments.
- Establish consortium of academic institutions with research programs in high altitude.
- Seek funding and collaborative relationships to study pulmonary hemodynamic control adaptations at high terrestrial altitude in Cricetid rodents.

Objective 3.4. Maintain consistent research productivity.

Strategies:

- Each professional staff member responsible for at least one grant application, study or peer-reviewed research publication annually.
- Continue collaborative research projects as "force multiplier" to increase research productivity and scope of activity.
- Utilize full-spectrum pressure capabilities for basic science, applied and clinical research projects.
- Programmed protected faculty research time.
- Employ one full time research assistant to support projects.

Objective 3.5: Maintain all appropriate professional certifications.

Strategies:

- Organizational certification by Underwater and Hyperbaric Medical Society and Joint Commission on Accreditation of Healthcare Organizations
- All chamber technicians certified by National Board of Diving and Hyperbaric Medical Technology.
- Physicians certified by appropriate Medical Specialty Boards.
- Researchers and human research projects approved by Institutional Review Board.

Objective 3.6: Maintain institutional and personnel affiliations with appropriate professional organizations.

Strategies:

- Institutional membership in Aerospace Medical Association, University Aviation Education Association, and Underwater and Hyperbaric Medicine Association.
- Institutional membership in the National Business Aviation Association for outreach.
- Establish an association of academic institutions with aerospace physiology training.
- Establish a research consortium of academic institutions with research programs in high altitude.