USAMRMC
Military Operational Medicine Research Program

Military Operational Medicine (MOM) research represents unique expertise in health and performance effects of multiple interacting operational hazards and stressors. This biomedical product line has special management challenges in the transition of models, methods, and criteria directly from the tech base to nonmedical users. Extensive use of other peoples' money, including special appropriations, more than doubles the investment in MOM issues. Coordination and collaboration with active Navy and Air Force MOM programs further extends the use of limited resources.

The Military Operational Medicine (MOM) Program is one of five product lines within the US Army Medical Research and Materiel Command (USAMRMC). Program management (i.e., planning, programming, and budgeting) is performed by a special directorate (RAD) at the HQ, USAMRMC. Program execution is the responsibility of lab commanders and extramural contractors. The products of this biomedical research (models, methods, and criteria) are primarily for nonmedical users and usually do not involve advanced medical development. Transition of these products requires active management in the form of scientific review and validation, and coordination of Army approval of policy recommendations.

Program management requires relentless pursuit of excellence and relevance to the Army S&T mission. Current issues include: sustaining centers specialized in core competencies; retaining high quality scientists who are attracted by factors other than pay; breaking down stovepiped research in favor of high payoff interdisciplinary research; promoting highest quality science through collaborations with other scientists ("government operated, collaborator assisted"); and reducing time wasted reporting activities instead of results. MOM program management also requires close coordination with similar Navy and Air Force programs to ensure both collaboration and lead service specialization (Project Reliance), while ensuring that Service- and platform-specific issues are addressed. This program extensively leverages "other people's money" (OPM), including special Congressional appropriations relevant to health and performance of deployed soldiers.

Planning

Program goals are established in the RAD and constantly updated from the results of war gaming (e.g., VANGUARD 97; AMEDD Technology Workshop 99; Technology and Materiel Game) and projected Army needs (e.g., Battle Labs, Centers & Schools, CHPPM, DCSPER). Objectives are set on the basis of these goals and with identification of feasible technologies by expert panel reviews and researchers in the program.

Long-term objectives require significant research breakthroughs before an organized research program can be planned. Current efforts are limited to monitoring emerging research in core competencies to take advantage of new discoveries and prevent technological surprise. ***Midterm objectives*** are high risk (low likelihood of success) but can be addressed by hypothesis-driven research to overcome technological barriers and explore paths to enhance soldier health and performance (SRO and STPs). The results transition to other scientists. ***Near-term objectives*** are addressed by applied research that is currently programmed (STOs and STPs). The results transition to materiel developers, policymakers, and other Army customers.

Core competencies are maintained in specific areas of physiology and psychology that are responsive to Army needs. This ensures an intramural capability to provide "best available" answers for immediate military issues and to guide competent research. The alternative to a program with scientific depth is a test and evaluation capability that does not advance generalizable solutions and lacks efficiency in applying leap ahead technologies.

Mission (Soldier-Oriented R&D–Medical)

MOM researches stressors and hazards encountered by soldiers in operational and training environments to provide timely and realistic biomedical solutions that protect and enhance soldier performance and health.

Vision

We will: deploy anywhere to ensure the needs of the soldier are studied in the operational environment; conduct research with a sense of urgency to have answers in time to make a difference; and provide commanders with the best biomedical solutions to protect, project, and sustain.

Research Goals

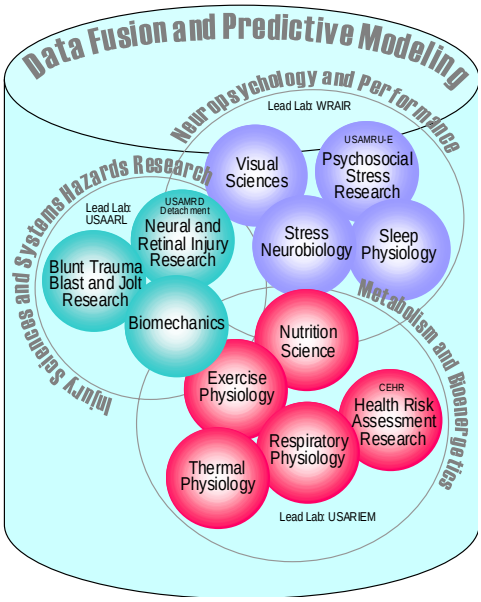
- *Maximized capabilities to exploit extreme environments*
- *Equipment optimized to soldier physiology*
- *Enhanced endurance from strategically timed interventions*
- *Maintained effectiveness in noise and laser environments*
- *Rapid training without injury through accelerated tissue repair*
- *Prognostics and diagnostics from physiological monitoring*
- *Psychologically hardened for full situational awareness*

Programming

RADs are held responsible for program "speed and direction" (vector). This is accomplished through the equivalent of program projects and center "grants" (multiyear programmed workpackages) to intramural labs. Current research is organized into 12 Army Science and Technology Objectives (STOs) and about 12 more Science and Technology Packages (STPs). These workpackages are tracked in the ASTMIS database.

STOs are firm commitments to Assistant Secretary of the Army (ALT) to meet specific objectives within a 3-5 year research effort that is conducted under an approved schedule with a fixed budget. Candidate STOs are developed by the RAD with lab input to establish realistic cost and schedule, and vetted through a process involving external review of the technology approach

Relational Map of MOM Core Competencies



and endorsements of relevance by other Army agencies. Several MOM STOs are shared with other Army agencies and STO efforts are integrated with complimentary efforts in other Services in Defense Technology Objectives (DTOs). STOs and their linkages to other Army efforts are published in the Army S&T Master Plan.

Well defined, low-to-medium risk objectives are captured in STOs. STPs organize the rest of the research into manageable groupings including: specialized problems (e.g., performance at altitude); immature technologies that may evolve into STOs (e.g., blunt trauma models); or a basic scientific discipline representing a core capability (e.g., sleep and brain research).

Every STO/STP area of the program is scheduled for a site review within a cycle of approximately 18 months. Reviews are conducted by independent panels of nationally recognized scientists whose collective expertise spans the areas reviewed. Reviewers critique recent work, planned studies, and the overall progress towards key objectives. Written critiques provided back to the RAD, lab commanders, and investigators are used to strengthen or redirect STO/STP research. These "program project" reviews do not replace laboratory science reviews that occur for every research proposal before studies begin.

Budgeting

Budgeting is determined by: (1) recommendations from science reviews and advisory panels, and (2) the need to maintain established core capabilities in a balance between basic research and applied research. An effort is made to keep a balanced portfolio across the three thrust areas and across competing priorities for very different Army users that depend on near-term research (e.g., SBCCOM, DBBL, CHPPM, DCSPER, and PEO-Aviation).

Annual funding priorities established in the RAD for STPs are based on recent history, with program inertia created by over 70% of the budget going to Army STOs and civilian salaries. RAD recommendations for FY01 funding priorities are based on program relevance of study topics submitted by labs to address key STO/STP objectives. The MOM program is also responsible for General & Administrative (G&A) costs for USARIEM and USAARL of approximately $1M/year each. Other budgeting includes RAD planning for special reviews, symposia, and development of printed or electronic media to push products (knowledge) to Army users.

Military salaries are paid from RDT&E funds but do not have to be budgeted within the MOM program. Other costs that were previously handled in budgets at higher levels such as base operations and infrastructure are increasingly being passed down to the program. Reduced military staffing and higher civilian staff costs are increasing bills charged to the MOM program while the annual budget has remained relatively flat. This delays RAD goals to restore a greater proportion of funding (MOM target: 30%) to extramural partners of intramurally-guided efforts.

Principles of MOM Research Program Management

1. **Basic research is integral to a strong military physiology program**
2. **Every study must be traceable to a military user or beneficiary**
3. **Independent scientific review by other scientists is mandatory in the research process**
4. **Opportunistic and reimbursable research needs to be carefully considered as it can produce high payoffs or major program distractions**
5. **Study priorities must favor core strengths with reliance on extramural partners in areas where we are not the recognized experts**
6. **Every study must culminate in an archived report with open literature publications most desirable**