

Focus on the FAA Civil Aerospace Medical Institute

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In June, I wrote that my goals for the President's Page would be to focus on different institutes that have made significant advances in aeromedical research. I'd like to begin by focusing on a research institution that has made significant contributions in the past and continues to make important advances in aerospace medicine—my own FAA Civil Aerospace Medical Institute (CAMI). But first, some history.

HISTORY OF CAMI

The Civil Aviation Research Institute was organized in 1959 and in 1960 the Office of the Civil Air Surgeon was established. In 1961 the Bureau of Aviation Medicine became the Aviation Medical Service and in 1963 its name was changed to the Office of Aviation Medicine. At the same time the title of the Civil Air Surgeon was changed to the Federal Air Surgeon. Two years later, in 1965, CAMI was created. In 2001 the scope of CAMI was expanded to incorporate commercial space transportation and the name was changed to the Civil Aerospace Medical Institute. CAMI's mission is to assure civil aerospace safety through excellence in aeromedical certification, education, medicine and human factors research, and occupational health services.

ORGANIZATION OF CAMI

CAMI is organized into five divisions overseen by the CAMI Director: Aerospace Medical Certification, Aerospace Medical Education, Aerospace Human Factors Research, Aerospace Medical Research, and Occupational Health.

The CAMI Director serves directly under the Federal Air Surgeon, oversees the work of the five divisions, represents CAMI globally at official functions and professional association meetings, advises government agencies, and briefs them on CAMI's accomplishments.

The Aerospace Medical Certification Division (AMCD) issues airman medical certificates on the basis of physical examinations performed by Aviation Medical Examiners (AMEs). Approximately 3,500 physicians are authorized to conduct aviation medical examinations of civil airmen globally. In addition, the AMCD makes recommendations to the Federal Air Surgeon (FAS) on the disposition of special issuance certifications.

The Aerospace Medical Education Division develops criteria and administers a program for the selection, designation, training, and management of AMEs. The division operates and maintains CAMI's altitude chambers, the thermal chamber, spatial disorientation trainers, emergency ditching simulators, and other facilities. In addition, the Education Division supports

physiological and survival training programs, and disseminates aerospace medical information nationwide. The Education division is also responsible for maintaining the CAMI Aerospace Medical Library and supports international aerospace medical and scientific exchange programs.

The Aerospace Human Factors Research Division is divided into two research laboratories: the Flight Deck Human Factors Research Laboratory and the National Airspace System Human Factors Safety Research Laboratory. The division assesses performance proficiency in human-machine systems in aviation under various conditions of impairment, the impact of advanced automated systems on personnel, and the psychophysiological effects of workload and shift work.

The CAMI Clinic provides professional occupational safety and health assistance as well as providing physical examinations for FAA pilots.

The mission of the Aerospace Medical Research Division is to improve the safety of humans in civilian aerospace operations through research. The division is divided into two research laboratories: the Bioaeronautical Sciences Research Laboratory and the Protection and Survival Research Laboratory. The Bioaeronautical Sciences Research Laboratory focuses on forensic toxicology, biochemistry, functional genomics, radiobiology, and bioinformatics. The Protection and Survival Research Laboratory's areas of interest include cabin safety, biodynamics, environmental physiology, medical review of accidents, and vision.

CAMI RESEARCH

It would be impossible to describe all of the activities CAMI is involved in here. CAMI conducts a broad spectrum of research, involving many aspects of aerospace medicine and human performance. I've selected a sample of current and future research projects to very briefly describe, in the limited space available, that I thought would be of interest to AsMA readers.

Have you ever wondered which pilots tend to truthfully report their medication use to the FAA? It's a legitimate question and it was the subject of a recent CAMI study. Medications reported on applications for U.S. medical certificates were compared to those discovered during post-accident toxicology testing. The findings



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were interesting. The study showed that the probability of a pilot truthfully reporting medication use increases with age and whether or not the pilot held a Special Issuance (SI) medical certificate. For each year of age the probability of a subject drug record being truthfully reported increased by 5%. In addition, a pilot with an SI was 3.12 times more likely to be truthful than a pilot without an SI.

Many other studies are either underway or planned.

- CAMI is involved in evaluating the safety of the recently inaugurated BasicMed program and a report is due to Congress in July of 2021.
- An in-flight Medical Event study is in progress to obtain accurate estimates of the numbers, causes, and operational consequences of in-flight events, offer improvements for crew protocols and the use of onboard medical kits, and provide recommendations to reduce such events.
- A Risk Based Decision Making (RBDM) study examines effective methods for assessment and implementation of mitigations as they relate to aviation operations and human factors, specifically targeting aviation maintenance.
- A study to explore the characteristics of Smoke, Odor, and Fume (SOF) events on U.S. airlines to shape policies that affect aircraft design, airline company policies, and aircrew protocols is moving forward.
- Another promising study is aimed at expanding Conditions AMEs Can Issue (CACI), which is focused on identifying additional medical conditions which an Aviation Medical Examiner (AME) can certify without further FAA medical review.
- An additional study will identify and evaluate cognitive screening tests to be used for aeromedical certification and research, and to provide reliable norms for commercially available neurocognitive tests.
- Research is being conducted on Wide Body Aircraft Slide Egress to provide empirical data on injury trends and background information for future studies, and a Seat Pitch and Width Egress study is in progress to investigate the safety impact of varying seat pitch on air carriers.
- A fatigue mitigation study is in progress that examines fatigue and performance for regional, multi-segment operations, new Long Range and Ultra-Long Range destination pairs, and helicopter air ambulance on-demand operations.

These are just a few areas of CAMI research.

Few advances in aerospace medicine, or any field, have been made without involving research at some point. Since 1959 CARI, and since 1965 CAMI, have made great contributions to aerospace medicine research. This has been a very brief description of their accomplishments.