

THE USAFSAM CARDIOVASCULAR DISEASE FOLLOW-UP STUDY: 1972 PROGRESS REPORT

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The USAFSAM Cardiovascular Disease Follow-Up Study is a prospective study of the relationship of serum lipid and lipoprotein levels to cardiovascular integrity. The purpose is to obtain information on the relationship of various lipid components of the blood to the occurrence of atherosclerotic heart disease (AHD).

Heart attacks are events of tremendous import to the victims. This human cost is shared by all who suffer a heart attack, whether they be civilian or military personnel. Certain other costs, however, are peculiar to the USAF. These center around the threat that sudden physical incapacitation poses as a possible cause of failure to complete a mission, of loss of aircraft, or of inability of the USAF to capitalize on a large investment if the victim has had prior extensive training or uniquely valuable experience. The reality of some costs of AHD to the USAF is indicated in Table I. Among USAF personnel, deaths due to AHD were 75 to 100% as high as combat deaths in the years 1966 - 1969. In addition, a minimum of 1 to 2 times that number were discharged with medical disability due to AHD. These figures specify the cost of AHD in terms of numbers of people subtracted from the roster of personnel. Additional costs not revealed by these figures would include removal of pilots from flying status, costs of hospitalization and of training replacements, and the fact that the toll exacted by AHD is primarily from the most experienced members of the USAF.

Table I. USAF Manpower Losses to AHD.

Year	Deaths		Disability Sep'ns and Retirements from Hospitals	
	bat	AHD	AHD	Total
1966	125	123	136	1764
1967	170	146	163	2171
1968	176	134	267	2904
1969	155	156	280	3347

Data are from the Surgeon General, USAF, Annual Report of the USAF Medical Service.

One possible way to minimize the costs of AHD and its threats to the capability of the USAF to successfully accomplish its mission would be to select candidates for prolonged training from populations of men among whom the incidence of AHD would be predicted to be lower than among the general population. To assist in the identification of such populations, the USAFSAM Cardiovascular Disease Study was begun in 1952. Serum lipid and lipoprotein levels were measured in members of the class of cadets who entered the US Military Academy at West Point in that year. Subsequently, these levels have

been measured at 2-yr intervals and are to be repeated at 2-yr intervals throughout the lifetime of these men. Simultaneously, data pertaining to each subject's pertinent medical history, habits of exercise, etc., have been and will be collected.

The twentieth calendar year of the study is now in progress, with 394 subjects still active in the study. The distribution is shown in Table II.

Table II. Distribution of Subjects, 1972.

- 394 Active
 - 233 US Army
 - 82 US Air Force
 - 1 Flight Surgeon
 - 8 Navigators
 - 73 Senior Pilots
 - 79 Civilian
 - 63 Withdrawn*
 - 22 Dead
 - 9 Accidents
 - 6 Air
 - 3 Car
 - 3 Military Duty
 - 4 Disease
 - 1 Poliomyelitis
 - 1 Kidney failure
 - 1 Hodgkins Disease
 - 1 AHD
 - 6 Unknown

479 original group in 1956

*The subject who died of AHD in 1971 had withdrawn from the study in 1962.

The mean levels of cholesterol and phospholipid and of lipoproteins are summarized in Figs. 1 and 2, respectively. Mean levels of most of these increased significantly during the first 6 years of the study. Concomitantly, the high density lipoprotein levels declined. We have speculated that these changes are the net effect of vigorous exercise and an abundant supply of calorie-rich food, although some role of normal maturation in this highly selected population cannot be ruled out.

Important conclusions about the relationship between AHD and serum lipids are not warranted at this point in the study. However certain facts deserve emphasis. One is that, although the meaning of observed trends cannot be interpreted now, these meanings will be apparent later when recognized symptoms of AHD occur more frequently. A second important fact relates to the question of whether serum lipid and lipoprotein levels measured in a young man can predict the occurrence of symptoms of AHD in later years in that

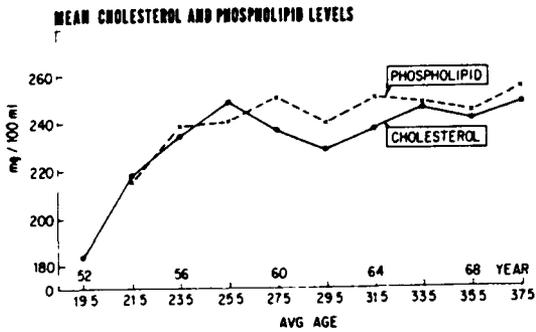


Fig. 1. Mean serum phospholipid and cholesterol levels in subjects of the USAFSAM Cardiovascular Disease Follow-Up Study for the years 1952-1970.

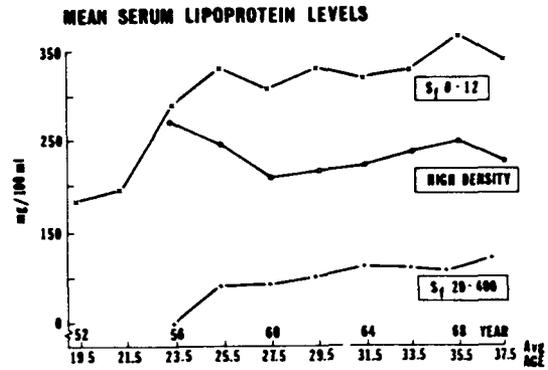


Fig. 2. Mean serum lipoprotein levels in subjects of the USAFSAM Cardiovascular Disease Follow-Up Study for the years 1952-1970.

man. This question is peculiarly important to the USAF with its interest in identifying a relatively AHD-free population from which to select candidates for extended training or critical assignments. To answer that question requires collection of data from the same individual over a long period of time. If a new study to answer that question were started today, it would be 20 years before that study would be as far along as the USAFSAM study is today. This fact emphasizes the importance of the solid data base that has been accumulated and the importance of its expansion to adequately characterize significant cardiovascular developments among the subjects as these events occur during the coming decades.