CARDIOVASCULAR WAIVERS

CONDITION: HYPERTENSION (ICD9 401.9)

Revised October 2001

AEROMEDICAL CONCERNS: Untreated hypertension is a major risk factor for the development of cardiovascular disease including coronary artery disease, congestive heart failure, cerebrovascular accidents, peripheral vascular disease, and renal disease. The relative risk of developing coronary artery disease is compounded when untreated hypertension co-exists with hyperlipidemia, cigarette smoking, increasing age, or diabetes.

WAIVERS: Waivers for hypertension are routinely granted for Class 2, 3, & 4 aircrew members when treatment has achieved a normotensive state (less than 140/90 mm Hg) and evaluation reveals no underlying pathology. Individuals controlled with lifestyle modifications alone will also require a waiver even though control is achieved without medication.

INFORMATION REQUIRED: The goal of initial work-up of a questionably hypertensive patient is to verify the diagnosis with a 3-day b.i.d. BP reading. If the average of these readings is greater than 139/89, further evaluation must be done to exclude underlying pathology/secondary causes.

Initial evaluation should include:
* Documentation of aircrew member and family history with regard to CAD, Hypertension, Cerebrovascular accidents, Diabetes mellitus, Hyperlipidemia, and Renal Disease.
* Documentation of lifestyle and habits with regard to recent weight gain, physical activity, diet, tobacco, and alcohol use.
* Documentation of all medications currently in use to include OTC, herbal preparations, and prescription medications.
* CBC
* CHEM. 7 (serum electrolytes, glucose, BUN, and creatinine),
* Uric acid,
* Lipid Profile (total serum cholesterol, HDL cholesterol, triglycerides),
* ECG,
* Routine urinalysis, and
* Direct ophthalmoscopic examination.

If these studies are negative, nothing further is required. Abnormalities however, must be evaluated by internal medicine, cardiology, nephrology, or ophthalmology, as appropriate.

FOLLOW-UP: Continuation of waiver requires the annual submission of a CHEM. 7, ECG, UA, and 3-day b.i.d. BP determination. Annual submission of 3-day b.i.d. BP

determinations are also required for those individuals controlled by diet and exercise alone. Certain medications will require unique annual submissions - see below.

TREATMENT: JNC VI report(reference listed below) contains detailed guidance and evaluation and therapy for hypertension. Lifestyle modifications to include: exercise, weight loss, salt restriction, alcohol abstinence, smoking cessation, reduction in caffeine consumption, adequate dietary potassium, calcium, and magnesium, and a diet limited in saturated fat and cholesterol is the suggested initial treatment for hypertension. If medication is required, the aircrew member must be grounded for a sufficient period to observe for side effects and can resume flight when stable on medications and blood pressure is trending appropriately. Waiver should be requested when on a stable dosage and adequate BP control is achieved. Waivers are granted for class of medication use; therefore, if local pharmacy policy or clinical judgment requires a change to a medication within the same class, no additional waiver action is required. Per Jnc VI, the initial medication should be a diuretic, but operational conditions and individual response will guide therapy. A current (within 90 days) set of laboratory results are required on the annual FDME.

Ace Inhibitors : CAPTOPRIL (Capoten), ENALAPRIL (Vasotec), LISINOPRIL (Zestril), BENAZEPRIL (Lotensin), FOSINOPRIL (Monopril), QUINAPRIL (Accupril), RAMIPRIL (Altace), TRANDOLOPRIL (Mavik), MOEXIPRIL (Univasc). Required labs: Chem -7 in first 7 to 10 days of therapy to evaluate effect on BUN, creatinine and Potassium levels and then this will be required every 3 months for the first year of therapy, followed by annual reporting of these levels on FDME.

Angiotensin II Receptor Blockers: LOSARTAN (Cozaar), Valsartan (Diovan), Irbesatan (Avapro), Candarsartan (Atacand).

ACE and ARB II in Combination with approved diuretics may be used.

Alpha Blockers: PRAZOSIN (Minipress), DOXAZOSIN (Cardura), TERAZOSIN (Hytrin).

Beta Blockers: ATC PERSONNEL ONLY - ATENOLOL (Tenormin), METOPROLOL (Lopresor), PROPRANOLOL (Inderal). These are considered Class 4 medication for all other aircrew. (See Medication APLs)

Calcium Channel Blockers: AMLODIPINE (Norvasc) can be used with waiver in any aircrew member. A**TC PERSONNEL ONLY** - VERAPAMIL (Calan), NIFEDIPINE (Procardia), DILTIAZEM (Catapres). These are considered Class 4 medications for all other aircrew.

Clonidine: ATC PERSONNEL ONLY – This is considered Class 4 medication for all other aviation classes.

Diuretics - Thiazide, Potassium-sparing, and combinations. All LOOP DIURETICS are Class 4 medications and will not be waived. Required labs: Thiazide use requires annual serum glucose, BUN, creatinine, and serum uric acid. Thiazides may alter serum cholesterol and triglycerides; therefore, monitor lipid profile after 6 months of therapy and then annually. Use of any potassium sparing diuretic requires serum potassium level every 6 months. TRIAMTERENE (Dyrenium) requires platelet count and CBC with differential every 6 months.

DISCUSSION: Primary Prevention is key. A significant portion of cardiovascular disease occurs in people whose blood pressues is above the optimal level (120/80 mm Hg) but not so high as to be diagnosed or treated as hypertension. Review of AEDR data indicates that 86% of those requesting waiver for this condition have them granted and those who do not receive waivers generally have another more serious condition leading to suspension. USAAMA stresses the need for flight surgeons to work on primary prevention with aircrew members and to aggressively diagnose and treat hypertension to prevent long term sequelae.

In the Framingham study, the mortality of individuals with hypertension was more than double that of the normotensive population, with most of the deaths occurring suddenly. The risk of cardiovascular events increases with age, smoking, male gender, positive family history, excess alcohol intake, and high blood lipid levels. Several studies have demonstrated a reduction in mortality and morbidity resulting from the treatment of hypertensive patients.

REFERENCE: ***The Sixth Report of the Joint Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.*** **NIH: National Heart, Lung, and Blood Institute 98-4080, Nov 1997**
http:www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm