

GUIDELINES FOR FLIGHT SURGEONS

MEDICATIONS AND AIRCREW

TABLE OF CONTENTS

GENERAL INFORMATION	2
DRUGS, DISEASES AND FLIGHT SAFETY	3
DRUG GROUPS - CONSIDERATIONS AND RECOMMENDATIONS	4
a. ANTIBIOTIC.....	4
b. ANTIHISTAMINES.....	5
c. NSAIDs and ANALGESICS	6
d. DECONGESTANTS	7
e. ACID SUPPRESSION THERAPY – PUD, GERD AND DYSPEPSIA	7
f. SEDATIVES/ HYPNOTICS	7
g. HYPERTENSION	8
(1) ASSESSMENT	8
(2) LIFE-STYLE MODIFICATIONS.....	8
(3) THIAZIDES.....	9
(4) BETA-BLOCKERS.....	9
(5) ACE INHIBITORS.....	9
h. ANTI-MOTION SICKNESS DRUGS	10
i. ASTHMA.....	10
j. ORAL CONTRACEPTIVES.....	11
k. TREATMENT OF HYPERLIPIDEMIA IN AIRCREW	11
l. ANTI-DEPRESSANTS	12
m. THYROID.....	13
(1) HYPERTHYROID:	13
(2) HYPOTHYROID:.....	13
n. MISCELLANEOUS	13
(1) HAIR GROWTH STIMULANTS	13
(a) ROGAINE.....	13
(b) PROPECIA.....	13
(2) STEROIDS:	14
(3) ACCUTANE:.....	14
(4) IMODIUM	14
(5) SMOKING CESSATION AIDS.....	14
(6) IMMUNIZING AGENTS.....	15
(7) GLAUCOMA	15
(8) ANTIFUNGAL DRUGS	15
(9) VIAGRA.....	15
(10) GOUT PROPHYLAXIS.....	15
(11) TREATMENT AND SUPPRESSION OF HSV	15
(12) HERBAL AGENTS.....	16
DRUGS CURRENTLY APPROVED FOR USE WITHOUT REQUIRING AN OPERATIONAL FLYING RESTRICTION.....	16

GUIDELINES FOR FLIGHT SURGEONS

DRUGS AND AIRCREW

GENERAL INFORMATION

1. These Guidelines have been developed to assist Flight Surgeons in determining the aeromedically acceptable use of medications for aircrew. Each prescribing situation is unique in terms of the illness, the individual, and the drug, and it is difficult to legislate the sensible use of medications in aircrew. Determining whether a medication may be used in aircrew on flying duties and what restrictions may be appropriate should be based on a sound knowledge of aeromedical evaluation of the drug if available, drug actions, side effects, and the operational environment including possible contingency situations. Aircrew are prohibited from self-medication under Canadian Forces Flying Orders, CFP 100, Volume 3, Chpt 4, paras 2-4

2. When determining appropriate flying restrictions, the Flight Surgeon should consider whether he/she would be comfortable flying on the various missions that the aircrew/patient will be serving on, while taking the prescribed medication.

3. If in doubt about prescribing a medication for an aircrew, Flight Surgeons should consult with:

- a. 1 CAD Divisional Surgeon (LCol Carl Walker) at CSN257-5488; or
- b. CFEME/DRDC Toronto Medical Assessment and Training (MAT) consultants:
 - (1) Head / MAT (Cdr Cyd Courchesne) at CSN634-2024 or Commercial 416-635-2024;
 - (2) Internal Medicine Specialist/Flight Surgeon (LCol Tim Cook) CSN634-3222 or Commercial 416-635-2000 X3222;
 - (3) Surgeon General's Consultant in Aviation Medicine (Dr Gary Gray) at CSN634-2015 or Commercial 416-635-2015;
 - (4) Flight Surgeon (Dr Bob Thatcher) at CSN634-2014 or Commercial 416-635-2014; or
 - (5) Flight Surgeon (Dr Bill Bateman) at CSN634-2159 or Commercial 416-635-2159.

4. When aircrew are started on a long-term medication, the Flight Surgeon must inform CFEME/DRDC Toronto - Medical Assessment Section (MAS) even if there is no change in medical category. CFEME/DRDC Toronto - MAS maintains a medical database on all CF aircrew, and only by receiving ongoing current information can appropriate statistical information be obtained on our aircrew.

5. One of the functions of the Flight Surgeons is to brief their squadron aircrew on the appropriate use and precautions in the use of drugs, including over-the-counter (OTC) medications and herbal preparations, which aircrew may not consider as "drugs". These guidelines may be helpful in the preparation of such briefings. A review article on "Herbal Preparations: A Primer for the Aeromedical Physician" was published in *Aviation, Space and Environmental Medicine* 2000;71: 45-60.
6. Aircrew may also be prescribed medications from sources other than their Flight Surgeon e.g. by Dental Officers or Consultants, and aircrew should be briefed in the requirement to consult their Flight Surgeon prior to returning to flying duties while taking medication prescribed from any source.

DRUGS, DISEASES AND FLIGHT SAFETY

7. In prescribing any medication for aircrew, the Flight Surgeon should consider both the nature of the disease process, and the medication. Sometimes, the disease or medical problem itself will preclude flying rather than the potential side-effects of the medication. A simple example is the use of topical nasal steroids in allergic rhinitis. It's not the medication, but rather the degree of upper respiratory congestion and systemic atopic symptoms that are the determining factors. Inability to clear the ears on descent can cause considerable pain during a very critical portion of the flight, and be of much more concern than the side-effects of a topical nasal steroid, for example.
8. The medication may also be of concern in the aviation environment. There are no drugs which are "absolutely safe". There is a degree of unpredictability with any drug. Remember, too, that the disease process itself may have an effect on a drug action.
9. When prescribing medications to aircrew, we are concerned about two possibilities:

- a. Acute incapacitation

Is there any possibility that this drug, in this situation, might cause incapacitation; anaphylaxis, acute vertigo, hypotension, arrhythmias, diplopia etc. Remember, side-effects that may be merely annoying on the ground can be fatal in air operations.

- b. Performance decrements.

Performance decrements may occur through a direct effect on the CNS, or, by a peripheral side-effect e.g. GI upset, which can be distracting enough to cause a critical lapse of attention. Drugs with obvious CNS side-effects, e.g. minor tranquilizers are obvious exclusions, but subtle side-effects from other medications may also cause serious flight safety problems. For example, gastrointestinal upset from erythromycin which

caused mild nausea resulted in anxiety, hyperventilation and an air emergency for a student pilot at CFB Moose Jaw.

10. When considering the potential safety implications of both drugs and illness, there are three major areas of concern:

- a. Flight Safety - Does the medication or the illness have the potential to compromise flight safety? If so, the aircrew must be grounded.
- b. Flight Mission - In military air operations, successful completion of the mission may be of utmost importance, whether it be a tactical fighter sortie during hostilities, or a helicopter search and rescue mission to a sinking freighter in peacetime. Flight mission completion is a top priority that must be considered when prescribing medications to aircrew.
- c. Individual Health Compromise - The third major concern of is the health and well being of the individual aircrew member. For example a pilot with early ankylosing spondylitis would be better to be restricted from rotary wing operations where back discomfort due to posture and vibration is a very common problem, than to continue flying in the environment with a medication even though aeromedically acceptable.

DRUG GROUPS - CONSIDERATIONS AND RECOMMENDATIONS

The following section provides general guidelines for specific drug groups. Unfortunately, it is impossible to cover every drug available. Remember, if you have any doubts or concerns regarding a particular prescribing situation, be sure to discuss the problem with one of the physicians on the staff of the 1 CAD or CFEME/DRDC Toronto. It is imperative that medication not previously cleared for use in CF aircrew not be used prior to obtaining clearance from CFEME/DRDC Toronto - MAS. Flight Surgeons must be aware of the pharmacokinetics and side-effect/adverse reaction profiles of any medication which is prescribed to an aircrew.

- a. ANTIBIOTIC
 - (1) Most calamitous events occur in the first 48 hours. A minimum grounding period of 4 days is recommended prior to returning to flying duties, providing the acute infectious illness has resolved and there are no drug side-effects. For elective therapy, i.e. long term antibiotics (e.g. a tetracycline for acne), we recommend a minimum observation period of seven (7) days. Be aware of possible "hypersensitivity" reactions, or disturbance of GI flora with side-effects which may not be disabling, but may be distracting. Minocycline is particularly to be avoided because of its high (up to 70%) incidence of vestibular side-effects, but other antibiotics such as TMP-SMX can also cause vestibular side-

effects, and aircrew should be carefully questioned about any sensations of unsteadiness before returning to flight duties. Topical antibiotics do not normally require a grounding period.

- (2) Routine prophylaxis for traveller's diarrhea in aircrew is not recommended, but broad spectrum treatment e.g. with ciprofloxacin may be useful to hasten recovery and return to flying duties.
- (3) Malaria chemoprophylaxis is covered under CFMO 37-06 and Medical Directive 2/88, but the recommendations change frequently and Flight Surgeons responsible for aircrew being deployed to or through malarial areas should consult LCol Tim Cook at CFEME/DRDC Toronto at (416) 635-2000x3222 for the most current recommendations. Aircrew should be grounded for 24 hours after the first dose of chloroquine before deployment, but grounding is not required for further weekly preventive doses. Doxycycline is currently recommended for chloroquine resistant areas. Mefloquin is not recommended for prophylaxis in aircrew because of the potential neurocognitive effects.

b. ANTIHISTAMINES

- (1) The anticholinergic and sedative effects of the older generation anti-histamines make them unsuitable for use in aircrew. The sedative interactive effects with alcohol are potentiating and potentially dangerous.
- (2) Loratadine (Claritin) and fexofenadine (Allegra) are H1 antihistamines which have not been demonstrated to have anticholinergic or CNS effects. Clemastine (Tavist) and cetirizine (Reactine) may produce drowsiness and CNS side-effects and are not recommended for aircrew.
- (3) Loratidine (Claritin) and fexofenadine (Allegra) may be prescribed for CF aircrew with mild or moderate allergic rhinitis or other situations requiring an antihistamine (eg chronic urticaria). The drug should first be used for a non-flying trial period of at least 7 days, and the minimal dosage which effectively controls symptoms determined. Aircrew must be seen again before returning to flying duties, and the presence of any side-effects as well as the extent of symptomatic control determined. Alcohol must not be taken within a 24 hour period prior to flying while taking an antihistamine. For pilots, even though no CNS effects have been demonstrated, loratidine/fexofenadine should be use cautiously and under close scrutiny, but no flying restrictions are necessary provided there are no side-effects.

c. NSAIDs and ANALGESICS

- (1) ASA and the non-steroidal anti-inflammatory drugs (NSAIDs), which inhibit prostaglandin synthesis, all have potentially serious side-effects on both the GI tract and the CNS. CNS effects include sedation, headaches, and decreased vigilance. Indomethacin generally produces the most pronounced CNS effects.
- (2) GI effects are commonplace and vary from non-specific, distracting GI upset to frank gastritis progressing to ulceration. NSAID's may result in frank, sometimes massive GI bleeding which may occur without other ulcer symptoms. This risk can be significantly reduced by concurrent protection with a proton-pump inhibitor (pantaprazole). The COX-2 inhibitors have a lower risk for GI complications but there is still concern about their overall safety profile with more cardiovascular serious adverse effects than with non-selective NSAIDs.
- (3) Hypersensitivity reactions e.g. acute bronchospasm may occur with any of the NSAIDs in "sensitive" persons. Increases in hepatic transaminases progressing to frank hepatitis may also occur.
- (4) For simple analgesia e.g. relief of musculoskeletal aches, headache, etc, acetaminophen is preferable to ASA for use by aircrew. Aircrew should be briefed on the potential GI side-effects of ASA and NSAIDs and be cautioned on self-medicating with OTC ASA/NSAIDs.
- (5) If required for brief periods (up to a week) e.g. for musculo-skeletal injuries, for pilots, NSAIDs may be used as an occasional as required HS medication if on flying duties. For non-pilot aircrew, NSAIDs may be used cautiously while on flying duties, bearing in mind that mission completion may suffer should a serious side-effect occur eg GI bleed. Muscle relaxants e.g. Flexeril and drug combinations e.g. with codeine or meprobamate must not be used by any aircrew on flying duties. The use of any drug containing a narcotic requires grounding. Muscle relaxants may have long half-lives, and aircrew may require continued grounding for several days (at least five half-lives) after being prescribed such medication.
- (6) If aircrew require NSAIDs for prolonged periods, NSAIDs should be prescribed with appropriate GI protection with a proton pump inhibitor such as pantaprazole. Pilots on long-term NSAIDs (over two weeks) are restricted to fly with or as copilot.

d. DECONGESTANTS

- (1) Topical decongestants are generally safer than systemic preparations, although even the topical sympathomimetic sprays are absorbed to a certain extent and can produce measurable adrenergic effects. The rebound effect of topical sympathomimetic sprays, e.g. Dristan, can start after as short a time as 48 hours repetitive use. These medications also reduce ciliary activity and so reduce mucus clearance.
- (2) Topical corticosteroids and sodium cromoglycate for allergic rhinitis produce no significant systemic effects and can be used for aircrew without restrictions.
- (3) Systemic decongestants containing a mixture of compounds, usually including an antihistamine, should be avoided for all aircrew. Systemic decongestants may not be used by pilots, navigators, flight engineers, or loadmasters on flying duties.
- (4) Since many compounds of this type are freely available over-the-counter, Flight Surgeons should regularly brief aircrew on the potential hazards of these compounds, including the potential arrhythmogenic potential of pseudoephedrine

e. ACID SUPPRESSION THERAPY – PUD, GERD AND DYSPEPSIA

- (1) Active GI ulcer disease requires grounding. Aircrew suspected of having active ulcers should undergo endoscopy to include biopsy for *H. pylori*. Active ulcers should be treated with a proton-pump inhibitor such as pantoprazole which produces the most rapid healing, and if *H. pylori* has been demonstrated, eradication should be undertaken with appropriate combined therapy. Before returning aircrew to active flying duties, repeat endoscopy is advisable out to confirm ulcer healing.
- (2) For dyspeptic symptoms without a demonstrable ulcer, for reflux symptoms, and for "maintenance" therapy after ulcer healing, high potency antacids (Maalox TC; Mylanta II), sulcralfate, or ranitidine in an HS dosage regimen, or pantoprazole may be used by aircrew. For *H. pylori* associated ulcers, prolonged maintenance therapy is not required after appropriate treatment.
- (3) For gastro-esophageal reflux (GERD), PPIs such as pantoprazole are most efficacious and may be used for aircrew including pilots.

f. SEDATIVES/ HYPNOTICS

- (1) In general, this class of drug is not compatible with flying duties. There may be occasions under operational conditions when it may be useful to prescribe a short-acting sedative to facilitate sleep during a limited stop-over in long-haul transport operations. The RAF had considerable experience with temazepam during the Falklands campaign and found it quite effective in such circumstances. Because of the relatively long half-life of temazepam, zopiclone (Imovane), which has a shorter half-life and more rapid elimination is now used. Imovane must be prescribed under the very close scrutiny of the Flight Surgeon and should be trialed by aircrew at home before use in an operational setting. CFEME/DRDC Toronto is currently evaluating the efficacy of Imovane and melatonin to facilitate crew rest in 8 Wing trans-Atlantic C-130 operations.
- (2) Other drugs especially those with long-acting active metabolites e.g. diazepam, must not be used. Triazolam (Halcion) must not be used in aircrew because of the reports of hallucinations after use.

g. HYPERTENSION

(1) ASSESSMENT

For mildly elevated office readings, before a diagnosis of hypertension is made and treatment initiated, additional blood pressure data should be obtained from serial clinic readings, home blood pressure measurements, and ambulatory 24 hour blood pressure monitoring if available (can be arranged through the Medical Assessment Section at CFEME/DRDC Toronto). Additional investigations should include a CBC, urinalysis, and biochemical screen of renal and hepatic function, electrolytes, lipid profile, and blood sugar. An abdominal ultrasound (kidneys /adrenal glands) is recommended. An echocardiogram may demonstrate early cardiac target organ effects of hypertension such as diastolic dysfunction and increased left ventricular mass.

(2) LIFE-STYLE MODIFICATIONS

For mild hypertension, an initial effort should be made to control blood pressure by non-pharmacologic means including weight reduction, exercise, and alcohol avoidance. Should adequate application of non-pharmacologic methods fail to control the blood pressure, drug therapy may be required. The initiation of pharmacologic therapy for hypertension requires that aircrew be grounded until the blood pressure is controlled and the side-effects of treatment assessed, generally a minimum of 30 days.

(3) THIAZIDES

Thiazide diuretics have the longest track-record as antihypertensive medications in aircrew and do not require an operational flying restriction. However, they may not be effective, and they may also produce side-effects including hypokalemia, fatigue and impotence. Hypokalemia may be of concern in the aviation environment, predisposing to ventricular arrhythmias in high G manoeuvres. Potassium levels must be monitored while using thiazides in aircrew. Flight operations in extreme hot climates may aggravate such side-effects. Dyazide may be used, but combinations with spironolactone (Aldactazide) must not be used. Thiazides may also produce undesirable metabolic side-effects including hyperuricemia, hyperlipidemia, and glucose intolerance. These potential side-effects must also be closely monitored. Extending thiazide dosage beyond 25 mg daily of hydrochlorothiazide or equivalent is not likely to increase therapeutic efficacy, but may increase side-effects.

(4) BETA-BLOCKERS

Beta-blockers may be indicated as first-line antihypertensives if clinical assessment suggests a significant adrenergic input to the hypertension. Because of their central beta-blocking effect and potential effect on reaction times, a beta-1 selective agent such as atenolol or acebutalol is preferred. Pilots treated with beta-blockers must be assigned an A3 , restricted from solo tactical fighter and tactical helicopter operations. Serum lipids should be measured before initiating treatment and after several months of treatment to confirm a neutral metabolic effect on lipid metabolism.

(5) ACE INHIBITORS

Angiotension-converting enzyme inhibitors as a class have fewer side-effects than most other antihypertensives but have not as yet been extensively investigated aeromedically. One small study at CFEME/DRDC Toronto demonstrated a small decrease in G-tolerance in normotensive subjects on captopril. The current recommendation is that ACE inhibitors may be used without a flying restriction in aircrew other than tactical fighter pilots either as sole agents or in combination with thiazides. If ACE inhibitors are used in tactical fighter pilots (including Hawk, F-18), they should be referred to CFEME/DRDC Toronto for G-tolerance assessment before returning to flying duties after blood pressure control is stabilized. For aircrew who are unable to take ACE inhibitors but for whom angiotensin blockade is clinically appropriate, an angiotensin receptor blocker may be used (with similar considerations as for ACE inhibitors)

h. ANTI-MOTION SICKNESS DRUGS

- (1) Antihistamines such as dimenhydrinate (Gravol, Dramamine) have only minimal efficacy and cause significant sedation and so must not be used by aircrew. Meclizine (Bonamine) may be helpful for sea-sickness in deployed Sea-King non-pilot aircrew.
- (2) Transdermal scopolamine may produce significant side-effects including drowsiness and other CNS symptoms, and may cause visual problems with impairment of accommodation. Absorption of transdermal scopolamine is variable from person to person, and even in the same person under different conditions, so side-effects may be variable and unpredictable. It is not recommended for use in aircrew.
- (3) The combination of promethazine 25 mg and pseudoephedrine 60 mg may be efficacious in prevention of airsickness. This should be taken orally two hours prior to flight. It is to be used once a day. The main side-effect is drowsiness which can be significant and can last for 24 hours. Previously, ephedrine was used as a CNS stimulant to counteract the drowsiness but is no longer readily available in Canada, and has been replaced by pseudoephedrine.
- (4) Currently, no anti-motion sickness medications are considered safe enough for routine use by flight deck aircrew.
- (5) Aircrew operating in the tactical positions in the Aurora may use anti-motion sickness medications under the direct supervision of their Flight Surgeon. For student pilots or aircrew in the airsickness rehabilitation program, the 15 Wing Flight Surgeon may include short term use as part of the desensitization program.

i. ASTHMA

- (1) Asthma in general is not compatible with aircrew duties, and candidates with a history of recent asthma should not be selected for aircrew training. Aircrew candidates with a history of wheezing during childhood should be evaluated with an airway challenge test to objectively determine their current degree of airway reactivity.
- (2) Trained aircrew develop asthmatic symptoms should have a thorough pulmonary review including pulmonary function tests

before and after bronchodilator, airway challenge testing, and an exercise test if indicated.

- (3) If it is determined that the degree of airway reactivity is mild, and can be well controlled with inhaled corticosteroids with minimal requirement for inhaled beta-agonists, pilots can be returned to flying duties in other than tactical fighter operations and other aircrew may return to unrestricted duties. Oral bronchodilators including theophyllines and beta-adrenergics are not permitted. Leukotriene inhibitors have not been investigated from an aeromedical perspective, and at present should not be used in pilot aircrew. Use in non-pilot aircrew may be considered after consultation with CFEME/DRDC Toronto – MAS.

j. ORAL CONTRACEPTIVES

- (1) Oral contraceptives may be used by female aircrew without requiring a restriction. It is advisable to introduce these medications during a period off flying duties e.g. leave, course etc. The same applies when switching from one preparation to another. For emergency contraception (morning-after-pill), female aircrew should be grounded for 48 hours.

k. TREATMENT OF HYPERLIPIDEMIA IN AIRCREW

(1) GENERAL INFORMATION:

Pharmacologic treatment for hyperlipidemia should be initiated only after a reasonable trial of diet and life-style modification. Health Canada guidelines for initiation of drug therapy should be followed for aircrew as for other CF personnel. Aircrew candidates are screened for elevated lipids and candidates found to have a serious dyslipidemia are excluded, hopefully avoiding the problem of severe hyperlipidemia in trained aircrew. The following approach is recommended for trained aircrew found to be dyslipidemic based on two or more lipid determinations.

(2) LIFE-STYLE MODIFICATION

Diet remains the cornerstone of any treatment regimen. Referral (with the spouse if applicable) to a dietician is recommended. Dietary modifications should be reinforced by the Flight Surgeon over the first six months and lipid measurements repeated at two to three monthly intervals to determine the effect of the diet. Aircrew should be encouraged towards a regular exercise program – known to have a positive effect on lipid metabolism.

(3) DRUG TREATMENT

If medication is required for aircrew as per Health Canada guidelines, treatment with an HMG CoA reductase inhibitor (statin) is recommended. Because of its lower cost, fluvastatin is the currently recommended initial drug for Canadian Forces personnel including aircrew. If adequate control is not obtained with fluvastatin, other statins may be used. In situations where hypertriglyceridemia is the prevalent problem, atorvastatin, or a fibrate such as fenofibrate (e.g Lipidil Micro) may be indicated and may be used in aircrew.

Aircrew should be grounded for the first two weeks during the initiation of drug therapy for hyperlipidemia, and require bimonthly monitoring of lipid and transaminase levels during the first six months of treatment.

1. ANTI-DEPRESSANTS

- (1) Aircrew who present with symptoms of depression should receive appropriate clinical treatment. Psychiatric referral is indicated particularly if treatment with anti-depressants may be indicated. In the past, treatment with anti-depressants required grounding through the entire period of treatment, plus a post-treatment observation period of 3 months. This policy, along with a general reluctance of aircrew to seek treatment for psychiatric symptoms, led to aircrew avoiding seeking help for depression-related symptoms, which may often lead to a significant performance degradation. These concerns have resulted in a new CF policy on the use of SSRIs and related medications in CF aircrew.
- (2) The new policy allows non-pilot aircrew (ANav, FE, AEC/ACOP, AMT/AMTO, Loadmasters, AESOP, Flight Attendants), to return to flight duties while taking certain specific SSRIs (sertraline or bupropion) as early as six months after clinical resolution of depressive symptoms. Prior to return to flying duties, a review at CFEME/DRDC Toronto - CMB to include neurocognitive testing and review by a consultant aeromedical psychiatrist is required. Transport pilots flying in strategic operations only and Aurora pilots in non-ASW operations may also be considered. A concurrent temporary geographic restriction limiting deployability (G4T6) is required – requires specialist care at minimum of three monthly intervals, unfit deployments exceeding 8 weeks. Flight Surgeons managing aircrew with depressive illnesses should contact CFEME/DRDC Toronto - CMB early in the course of management to discuss potential return-to-flying strategy.

- (3) Other aircrew – Flight Nurses, Flight Surgeons, Flight PAs, may be eligible for return to flight status by the Wing/Base Flight Surgeon while taking sertraline or bupropion after six months of clinical stability, after discussion with CFEME/DRDC Toronto - CMB. Geographic restrictions as above apply.

m. THYROID

- (1) HYPERTHYROID:

Patients with hyperthyroidism must be grounded on diagnosis of hyperthyroidism. If thyroid suppression treatment with propylthiouracil or methimazole is undertaken, aircrew must remain grounded until a euthyroid state has been re-established. Aircrew other than pilot may be returned to flying duties under the close supervision of the Flight Surgeon, but require a geographic limitation from deployments greater than 8 weeks to allow appropriate follow-up. Pilots of tactical fighter and tactical helicopter aircraft must remain grounded during the full course of anti-thyroid suppression. I¹³¹ therapy may be preferred therapy. Aircrew must remain grounded during therapy and until clinically and biochemically euthyroid following treatment

- (2) HYPOTHYROID:

patients may be returned to flying duties while using thyroid replacement hormones once a state of clinical and biochemical euthyroidism has been established (TSH normal, no symptoms or signs).

n. MISCELLANEOUS

- (1) HAIR GROWTH STIMULANTS

- a. ROGAINE

Topical minoxidil should not be prescribed for pilots because of the small but documented incidence of systemic reactions including fainting and dizziness. Rogaine may be used by aircrew other than pilot after a 7 day grounding period to ascertain any potential side-effects. It is not supplied by the CF.

- b. PROPECIA

Finasteride is being promoted as another agent to regenerate hair growth and aircrew may approach the Flight Surgeon about its use. It is not supplied by the CF.

Aircrew using this medication should be grounded for 7 days for observation. Pilots are restricted to fly with or as copilot while taking finasteride

(2) STEROIDS:

Systemic steroids are not compatible with flight duties for any aircrew. Aircrew are not permitted to use anabolic steroids.

(3) ACCUTANE:

may be used by aircrew other than pilot without restriction after a 7 day initial period of grounding to establish that there are no significant side-effects. During the period of treatment, pilots using isotretinoin must be given a temporary A3 category, restricted to fly with or as copilot. All aircrew must remain under the close supervision of the Flight Surgeon in consultation with a dermatologist. Caution should be used in prescribing isotretinoin therapy for aircrew who use facemasks routinely while flying.

(4) IMODIUM

Imodium may be used for mild diarrheal symptoms in transport aircrew. It should be used only when the symptoms are mild, and there is no fever or bloody stools.

(5) SMOKING CESSATION AIDS

- a. Transdermal nicotine Aircrew including pilots may use transermal nicotine patches as an aid to smoking cessation without requiring an operational flying restriction. Patches must be used under the guidance of a Flight Surgeon. Aircrew should not fly for the first few days of initiating treatment and must be reviewed by the Flight Surgeon before returning to flying duties and at regular intervals to confirm that the individual has totally stopped smoking, and that there are no significant side-effects.
- b. Zyban (bupoprion). Non-pilot aircrew may be returned to flying duties after a two-week period of grounding, after being cleared by the Flight Surgeon. Because of potential neurocognitive side-effects, bupropion must be used with extreme caution and under close supervision in pilots. Pilots are restricted to fly with or as copilot during treatment. For all aircrew taking Zyban, weekly visits with the Flight Surgeon are required throughout treatment to monitor for side-effects and reinforce the smoking cessation objective. Medication should be supplied weekly

aliquots, and weekly visits documented in the CF2016.
Aircrew taking Zyban must not be deployed for periods more than 7 days.

(6) IMMUNIZING AGENTS

(ref Medical Directive). Aircrew members are not permitted to fly for 36 hours after receiving immunization, except no restriction is needed after oral polio, immune globulin, or the third and fourth typhoid doses. Reaction to immunization may be delayed, eg 5-10 days after yellow fever. Aircrew members should be cautioned about the delayed effects and are not permitted to fly when experiencing significant delayed reactions.

(7) GLAUCOMA

Epinephrine drops have already been used to treat aircrew members without restricting their flying status. Timolol and other beta-blockers were also used but restrictions to fly high performance aircrafts (fighters)s and tactical helicopters were imposed to pilots.

(8) ANTIFUNGAL DRUGS

Terbinafine (Lamasil), fluconazole (Diflucan) and other antifungal agents may be used to treat fungal infections of the nails in aircrew. GI upset is the most common side-effect. Aircrew should be grounded during the first week of treatment and pilots should be restricted to fly with or as copilot during treatment.

(9) VIAGRA

Pilots and other aircrew using Viagra should be grounded for 48 hours after using sildenafil

(10) GOUT PROPHYLAXIS

Allopurinol is currently approved for prophylaxis of gout without requirement for an operational restriction. Allopurinol is indicated for prophylaxis after recurrent episodes of gout. Because of the risk of precipitating an episode of gout during initiation of allopurinol therapy (which should generally be done with colchicine coverage), aircrew must be grounded for the first 14 days of allopurinol therapy.

(11) TREATMENT AND SUPPRESSION OF HSV

For aircrew with frequently recurring genital herpes, suppression by the administration of oral acyclovir (200 to 400 mg twice

daily), oral famciclovir (250 mg twice daily), or oral valacyclovir (500 mg daily) is acceptable for continuing aircrew duties.

(12) HERBAL AGENTS.

Little is known about most complementary supplements and herbal preparations in terms of potential side-effects of aeromedical concern. The purity and potency of preparations varies widely. Flight Surgeons should routinely inquire about herbal and supplement use during periodic aircrew medicals, and discuss the concerns about possible aeromedical side-effects. Flight Surgeons may have to research information from Internet sources to provide feed-back to aircrew about these concerns. A good review article on a range of herbal preparations is “Herbal Preparations: A Primer for the Aeromedical Physician”, published in Aviation, Space and Environmental Medicine, 71 (1); 45-60, January 2000. The following supplements / herbal preparations should NOT be used in aircrew on active flying duties:

- a. Creatinine;
- b. St-John’s Wort;
- c. Ephedrine – containing compounds; and/or
- d. Valerian.

DRUGS CURRENTLY APPROVED FOR USE WITHOUT REQUIRING AN OPERATIONAL FLYING RESTRICTION

11. There will be a requirement to ground aircrew for specified periods during the initial period of treatment for most of these medications. After return to flying duties, aircrew will require regular follow-up while taking these medications. If there are no problems in the follow-up period aircrew on these medications may fly unrestricted.

- a. INH for TB converters;
- b. Hydrochlorothiazide/Dyazide for hypertension;
- c. ACE inhibitors/ARBs; F-18 pilots required CFEME/DRDC Toronto review ;
- d. Allopurinol for hyperuricemia;
- e. Oral contraceptives;
- f. Tetracyclines/other antibiotics at low dosage for acne (NOT Minocycline);

Issued November 2001
Revised August 2002

- g. Sodium cromoglycate preparations - inhaled, or topical nasal or ophthalmic;
- h. Topical or inhaled steroid preparations;
- i. Antacids/sucralfate/Proton pump inhibitors;
- j. Epinephrine drops for glaucoma;
- k. Thyroid replacement hormone ;
- l. Antimalarial prophylaxis (CFMO 37-06) (chloroquine; doxycycline);
- m. Loratidine, fexofenadine;
- n. Transdermal nicotine for smoking cessation;
- o. Imodium;
- p. Lipid-lowering agents (Cholestyramine);
- q. Fluvastatin, pravastatin, simvastatin, atorvastatin;
- r. Fenofibrate (Lipid Supra); and
- s. Acyclovir/famcyclovir/valacyclovir for recurrent HSV.