

# Aeromedical Factors

Private and Commercial

### Medical Certificates

- A medical certificate is required for flying solo in an airplane, helicopter, gyroplane, or airship
  - Exception: Sport Pilot only requires a Driver's License
- You must be examined by an FAA-designated Aviation Medical Examiner (AME) to be issued one of 3 classes
- A special issuance can be sought for some cases, see 14 CFR § 67.401

Туре	Expiry < Age 40	Expiry <u>&gt;</u> Age 40	Use
First Class	12 Months	6 Months	Airline Transport
Second Class	12 Months	12 Months	Commercial
Third Class	60 Months	24 Months	Student/Private



\*When a certificate expires, it reverts to the lower class for the remaining duration

## Hypoxia

- Hypoxic Lack of oxygen absorption
  - Causes: High altitude
  - Symptoms: Euphoria, headache, dizziness, drowsiness
  - Effects: Impaired Judgement, increased response time
  - Corrective action: Descend or use supplemental oxygen
- Hypemic Decreased blood count
  - Causes: Anemia, disease, blood loss
  - Symptoms: Euphoria, headache, dizziness, drowsiness
  - Effects: Impaired Judgement, increased response time
  - Corrective action: Correct underlying physiologic pathology



## Hypoxia

- Stagnant Poor circulation of blood
  - Causes: Pulling excessive Gs, other physiologic causes
  - Symptoms: Euphoria, headache, dizziness, drowsiness
  - Effects: Impaired Judgement, increased response time
  - Corrective action: Operate within aircraft and personal limitations
- Histotoxic Inability to use oxygen
  - Causes: Alcohol, other drugs
  - Symptoms: Euphoria, headache, dizziness, drowsiness
  - Effects: Impaired Judgement, increased response time
  - Corrective action: Avoid drug use and abide by alcohol guidelines



#### Hyperventilation

- Causes: Increased breathing rate expels carbon dioxide (anxiety)
- Symptoms: Nausea, dizziness, drowsiness
- Effects: Impaired Judgement, increased response time
- Corrective action: Intentionally decrease breathing rate



### Middle Ear and Sinus Problems

- Causes: Infections/anatomy causing difficulty equalizing pressures
- Symptoms: Pain, headache, congestion
- Effects: Distracted state, discomfort and pain
- Corrective action: Address underlying pathology
  - Refer to "What Over-the-Counter (OTC) medications can I take and still be safe to fly?" before selecting a medication.

Type of medication	Commonly found in	Medication or active ingredient generally safe to fly GO	Avoid these medications or ingredients* NO GO	Rationale
Antihistamines	Allergy products Cough/cold products Pain products	Non-sedating products: fexofenadine (Allegra) loratadine (Claritin)	Sedating products: brompheniramine (Dimetapp) cetirizine (Zyrtec) chlorpheniramine (Chlor- Trimeton) <b>diphenhydramine (Benadryl)</b> levocetirizine (Xyzal)	Histamines affect not only your allergies, but your sleep wake cycle. Sedating antihistamines can cause drowsiness, impaired thinking and judgement.
	Sleep aid products	Melatonin (not an antihistamine)	diphenhydramine (such as Zzzquil). Same ingredient in Benadryl) Doxylamine (such as Unisom)	"Hang-over effect" morning after safety concern. NOTE: taking melatonin at the wrong time can actually worsen "jet-lag" and cause daytime drowsiness.
Nasal steroid	Allergy products	fluticasone (Flonase), triamcinolone (Nasacort)	None	
Nasal decongestants	Nasal congestion Sinus pressure Cough/cold products	oxymetazoline (Afrin), phenylephrine (Sudafed PE), pseudoephedrine (Sudafed) Less convenient, but safer, are the nasal salt water lavages such as saline nasal sprays Neti-pots	(Considered safe in recommended dosages)	<b>Caution:</b> Sudafed-like medications can speed up your heart rate; therefore, use caution if you have an underlying heart condition. Be very cautious of an extra cup of coffee or two when feeling sub-par. This has caused more than one pilot to end up in the emergency room for a racing heart rate.



#### **Spatial Disorientation**

- Causes: IMC, low visibility, hazy horizon, night flight
- Symptoms: Losing sense of aircraft's orientation
- Effects: Loss of control, CFIT, exceeding aircraft limitations
- Corrective action: RELY ON THE FLIGHT INSTRUMENTS





#### **Motion Sickness**

- Causes: Motion of aircraft conflicting with vestibular sense
- Symptoms: Nausea, vomiting, headache
- Effects: Distracted flying, discomfort
- Corrective action: Cool air and look out to the horizon



### Carbon Monoxide Poisoning

- Causes: Hole in exhaust manifold
- Symptoms: Headache, nausea
- Effects: Impaired judgement, delayed response time
- Corrective action: Address problem, e.g., turn off heating and establish outside air flow



#### Fatigue and Stress

- Causes: Emotional or physical fatigue
- Symptoms: Tiredness, fatigue
- Effects: Impaired judgement, delayed response time
- Corrective action: Address underlying problem, adequate rest



### Dehydration

- Causes: Inadequate water outtake or increased water loss
- Symptoms: Fatigue, dizziness
- Effects: Impaired judgement, distraction, discomfort
- Corrective action: Ensure adequate water intake



## The Effect of Alcohol and Drugs

- Alcohol can significantly impair performance by altering cognitive function
- Ensure always 8 hours from "bottle to throttle"
- Use your personal judgement



## Flying and Diving

- The relatively quick pressure changes from diving to altitude can cause Decompression Sickness (the bends)
- This is the result of nitrogen dissolved in the blood returning to a gaseous state
- This can cause
- Allow at least 24 hrs. to elapse between SCUBA diving and flying.



Organization	Recommended Surface Interval Before Flying	
Divers Alert Network (DAN)	12 hours (minimum)	
U.S. Air Force	24 hours	
U.S. Navy	2 hours	
Professional Association Of Diving Instructors (PADI)	12 hours (for single dives) 18 hours (for multiple dives) 24 hours (ideal recommended interval)	

### Additional Trivia

- Flying at night poses special risks
- Due to several factors (our eye dilating, the blue light of night) we become more near sighted and lose some distance vision at night
- If visibility is poor at night, we can also develop Empty Field Myopia
  - When the eye has nothing to focus on it accommodates and tries to focus at near
- In summary, vision is especially sensitive at night and these factors must be considered for safe planning



#### Questions?

