



Pregnancy in Aviation

An International Comparison
The Evidence Behind The Recommendations
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Disclosure

- I have no financial relationships to disclose.
- I will not discuss off-label use and/or investigational use in my presentation.
- The views expressed are those of the author, but official Air Force policy will be discussed/presented.



Pregnancy in Aviation

- **Pregnancy** is associated with typical physiological changes, pregnancy-specific diseases, effects on preexisting medical conditions, and effects on medications, all of which individually and in combination may be aeromedically significant.
- Prior to returning to the flight environment, it is essential that flyers and their medical care team are aware of these circumstances, the potential effect on flying performance and safety. It is essential to establish awareness, an accurate assessment, and appropriate monitoring methods to mitigate these risks.



USAF - Aeromedical Policy For Flying While Pregnant

- Is Pregnancy Automatically Grounding?
 - Yes
- Are Pregnant Aviators Eligible To Return to Flying?
 - Yes... under certain conditions
- During What Time Period Are Pregnant Aviators Eligible to Fly?
 - 12-28 Weeks
- Is A Waiver Required To Return to Flying?
 - Under new policy, a CLEARANCE is required, but not a waiver.
- What Level Has The Authority To Clear A Pregnant Aviator For Flying?
 - Base Level – if certain criteria are met
- What About RPA Pilots?
 - No flying restrictions throughout uncomplicated pregnancies



USAF - Aeromedical Pregnancy Policy - Conditions

- 12 through 28 weeks
- Uncomplicated, low risk
 - Singleton, Intrauterine, no significant abnormal physiological changes or significant pregnancy-specific conditions.
 - Normal prenatal labs and vital signs.
 - Obstetrician verified.
 - Less than age 35 at time of delivery.
- Aircraft restrictions
 - Cabin pressure (or natural flying altitude) < 10,000
 - Non ejection seat
 - Must fly with another qualified pilot
- Clinical Follow up
 - Every 4 weeks – with FS, after OB



US Service Components Comparison

Service	Year Policy Update	Automatic Grounding Upon Pregnancy?	Waiver Availability Time Frame	Aviator Consent Required?	Waiver Level	RPA Pilot	Restrictions: Cabin Pressure	Aircraft Type	Second Pilot Required	Follow up Requirements
USAF	2019	Y	Second Trimester 12-28 wks	Y	Base – if low risk. MAJCOM if other	No Waiver needed. Fly 0-40 weeks	< 10K MSL	Non-ejection seat	Y, fully qualified	Every 4 weeks
USN	2018	Y	Second Trimester (12-28 wks)	Y	Bureau of Navy Personnel (with 6 step approval process) ^	No DQ (if uncomplicated)	<10k MSL	Non-ejection seat, transport, Maritime, helicopter	Y	Every 2 weeks
USCG	2011	Y	Second Trimester (When US shows healthy pregnancy - 27 wks)	Y	USCG Personnel Service Center (with 4 step approval process)~	N/A	<10k MSL	Non-ejection seat; G force exposure/hypoxia should be avoided.	Y, Fully qualified	Every 2 weeks
USA	1997	Y	Second Trimester (12-28 wks)	Y	Approval from OB, FS, and Commander required	No DQ (if uncomplicated)	<10k MSL	Multiengine, fixed wing, non-ejection seat (sometimes waivers given to rotary wing pilots)	Y	None



International Air Force Comparison

Country	Year Policy Update	Automatic Grounding Upon Pregnancy?	Waiver Availability Time Frame	Aviator Consent Required?	Waiver Level	RPA Pilot	Restrictions: Cabin Pressure	Aircraft Type	Second Pilot Required	Follow up Requirements
United Kingdom	2019	Y	None. Grounded entire pregnancy.	N/A	N/A	No DQ (if without any of 9 listed symptoms) through 34 weeks.	N/A	N/A	N/A	N/A
Australia	?	Y	None. Grounded entire pregnancy.	N/A	N/A	?	N/A	N/A	N/A	N/A
France	?	Y	None. Grounded entire pregnancy.	N/A	N/A	?	N/A	N/A	N/A	N/A
Israel	?	Y	Second Trimester (15-25 wks)	?	?	?	<8k MSL	Transport/cargo, flights <4 hrs	Y	Monthly
New Zealand	?	Y	Second Trimester (13-24 wks)	Y	?	?	<10K MSL	Non-ejection seat	Y	Every 1-2 weeks (for visual acuity testing)
Canada	?	N [#]	0-24	Y	FS + Commander	?	<10k MSL	Non-ejection seat; <6 hr mission length	Y	"regular medical follow-up with ready access to physician service"



Civilian Aviation Policies

- **US Federal Aviation Administration (FAA)** - pregnancy under normal circumstances is not disqualifying. FAA recommends pilots to talk with own OB to discuss the risks of flying while pregnant, and to engage with employer to determine timeframe for flying.
- **International Civil Aviation Organization (ICAO)** - Pregnant pilots are considered "unfit" to fly, unless determined to have low-risk, uncomplicated pregnancies. For low risk, uncomplicated pregnancies, a "fit" time to fly can be considered from 12-26 weeks.
- **Airlines** – Various policies. No automatic grounding, no waivers required, most allow flying through 32 weeks. Some require follow up medical documentation.
 - US airlines must follow Americans with Disabilities Act Guidelines
 - Pilot/Flight Attendant Unions involved in policy making



Physiologic Changes of Pregnancy

- Vision
- Hypercoagulability
- Hemodynamic
- Cardiovascular
- Pulmonary
- Renal
- GI
- Endocrine
- Immune System
- Ergonomic Considerations
- Sleep Disturbances
- Cognitive abilities



Occupational Hazards/Concerns of Flying While Pregnant

- Radiation
- Reduced Oxygen Levels
- Reduced Pressure
- Temperature variations
- Toxin Exposure
- Noise
- Vibration
- Acceleration
- Egress concerns (Ground and In-Flight)



Medical Evidence Behind Recommendations?

Radiation – International Commission on Radiation Protection, Nuclear Regulatory Commission.

Reduced Oxygen Levels – Most studies done on people living at increased elevations. Few studies on flight attendants, passengers.

Reduced Pressure – similar to reduced oxygen levels.

Temperature variations – extreme temperatures needed to cause adverse effects

Toxin Exposure – no significant risk



Medical Evidence Behind Recommendations?

Noise – Multiple Studies show hearing system develops around 16-20 weeks

2016 Swedish Study, Occupational Exposure to Noise during pregnancy
Associated hearing dysfunction in kids born to women exposed to ≥ 85 dB at work

Vibration – No direct studies; mixed results of large multifactorial study.

Acceleration - No studies directly performed.

Uterus exposed to 3 times the acceleration forces compared to mother

Egress concerns

Ground – Ladder vs stairs
In flight



Other Issues of Concern

- Miscarriage/Early Pregnancy Loss
 - ~ 20-25% of all pregnancies.
 - Risk decreases to about 2% once heartbeat is found on ultrasound (about 10-12 weeks in pregnancy).
 - Increase because of aviation?
 - Occur at least as frequent as on ground.
- Professional Concerns
 - Maintaining Flying Currency
 - Lost opportunities for deployments
 - Lost opportunities for promotion
 - Perception about not doing equal work



Application of Information, Medical Recommendations

- Provided risk analysis of the hazards
- Established thresholds for safety of known hazards (if possible)
- Gathered data on levels of exposure of the hazards (if possible)
- Provided information, along with recommendations, to line leadership, to make decision for risk acceptance



Questions??

