

Fatigue Management Services (FMS) Team

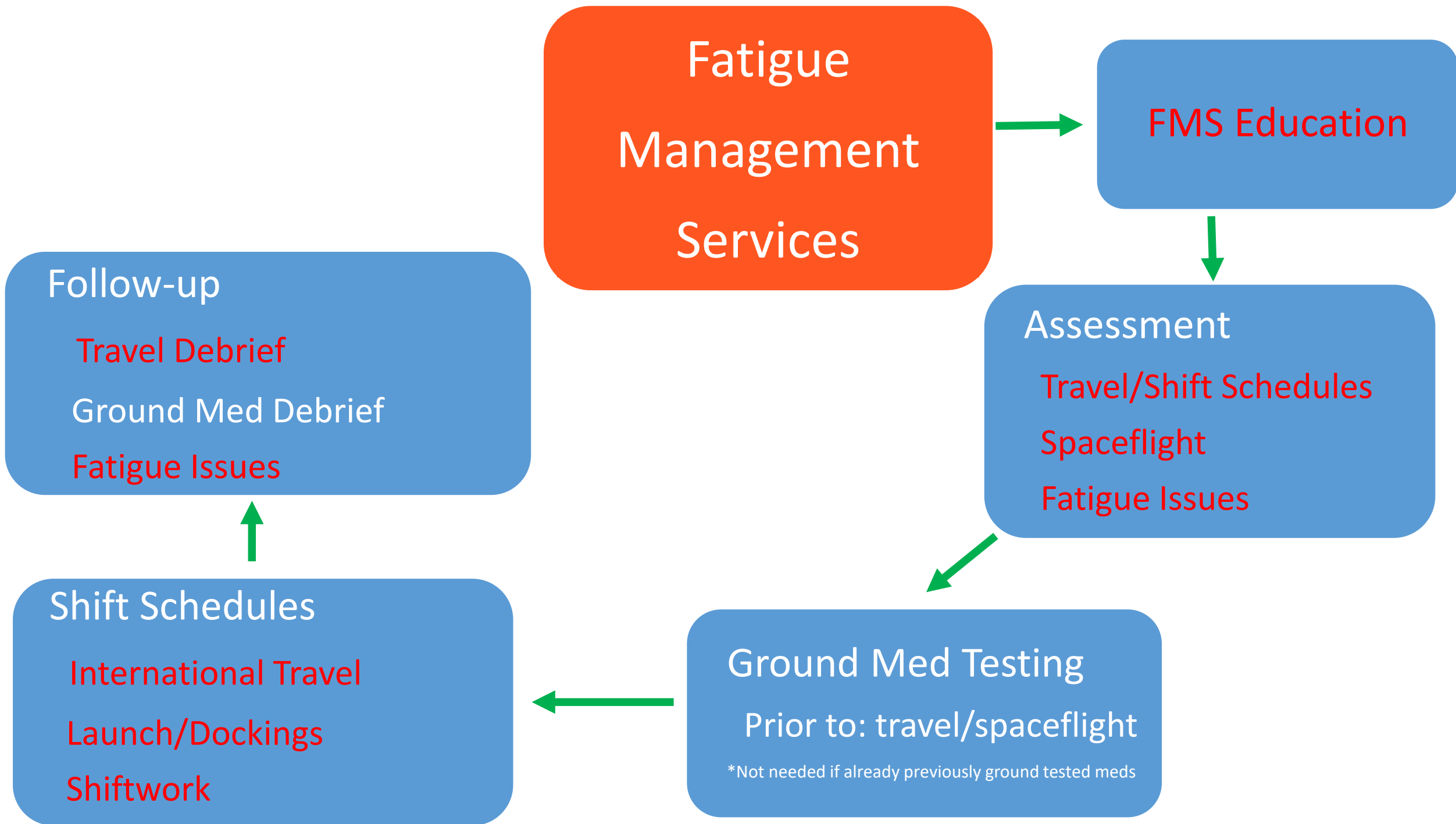


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Solid State Lighting Assembly currently in CQ and throughout various Nodes

Solid State Lighting Assembly/Night Glasses Guidance for ISS Crew Quarters

SSLA Mode	Correlated Color Temperature	Intensity (Candela)	Directions for Use
General Purpose Illumination	4500K	320 maximum 210 default 112 minimum	Nominal daytime use (post-sleep and up to 2 hours prior to sleep)
Pre-Sleep	2700K	130 maximum 90 default 45 minimum	• 2 hours prior to sleep • • Wear Night Glasses (blue blocker) for 2 hours prior to bedtime if using electronic devices *Avoid Cupola for 2 hours before bedtime or wear Cupola Day/Night Glasses
Alertness and Phase Shift	6500K	420 maximum/default 147 minimum	As desired, 30 minutes post-sleep and/or as instructed by flight surgeon

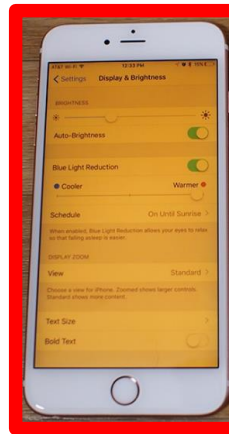
Blue light inhibits the production of melatonin and can alter circadian rhythm, promote alertness, and affect the quality and quantity of sleep. There are countermeasures onboard ISS to both enhance and reduce blue light exposure as appropriate. The SSLAs are an upgrade to the General Luminaire Assemblies (GLAs) that were previously used for lighting on the ISS. In addition to general illumination, the SSLAs can provide light that is either blue-enriched or blue-depleted. Utilization of these SSLA modes, in combination with the Night Glasses to block blue light as appropriate, may allow for improved sleep and increased alertness.



R2D2 Blue Blocker Glasses on ISS – repurposed from Cupola to CQ

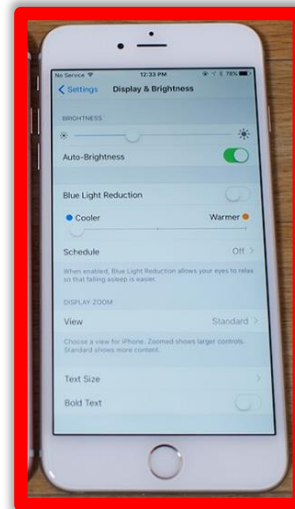
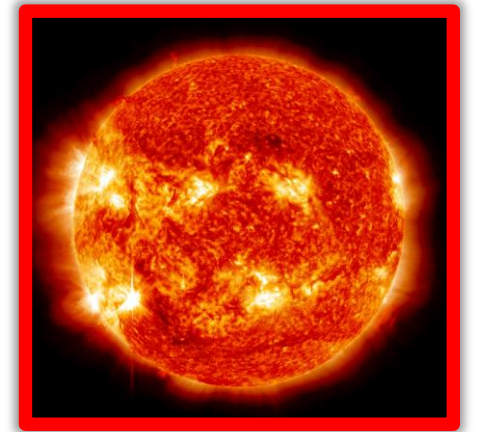
FMS Countermeasures for Promoting Sleepiness

- Blue Blocker Glasses
- Depleted Blue Light Bulbs/adaptor
- App to Block Blue Light on Electronics
- Eye Mask
- Ear Plugs
- Melatonin
- Hypnotics Medication



FMS Countermeasures for Promoting Wakefulness

- **Blue Light Box**
- **App to Enhance Blue Light on Electronics**
- **Sunlight**
- **Caffeine**
- **Alertness Medication**



Other Recommended FMS Countermeasures

- Schedules (Launch / Dockings / Travel / Shifts)
- Use app on electronic devices for control of light emission
- Cognitive Behavioral / Relaxation Training
- Stop Caffeine 4 – 6 hrs prior to bed
- Sleep Environment: cool, quiet, dark
- Power Naps (20 – 30 min)

