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Title: Visual Impairment and Intracranial Hypertension: An emerging spaceflight risk

Authors: JA Fogarty, JD Polk, W Tarver, CR Gibson, A Sargsyan, T Taddeo, D Alexander, C Otto

What is the risk? Given that astronauts exposed to microgravity experience a cephalad fluid shift, and that both symptomatic and asymptomatic astronauts have exhibited optic nerve sheath edema on MRI, there is a high probability that all astronauts have some degree of increased intracranial pressure (ICP; intracranial hypertension), and that those susceptible (via eye architecture, anatomy, narrow optic disc) have a high likelihood of developing papilledema (optic disc edema, globe flattening), choroidal folds, and/or hyperopic shifts and that the degree of edema may determine long-term or permanent vision impairment or loss. Back to back panels on this topic have been developed to address this emerging risk. The first panel will focus on the 6 clinical cases with emphasis on ophthalmic findings and imaging techniques used pre-, in-, and post-flight. The second panel will discuss the operational mitigation and medical requirements, the potential role of CO₂ on ISS, and the research approach being developed. In total these back to back panels will explore what is known about this risk, what has been done immediately to address it, and how an integrated research model is being developed.

First panel will be 1.5 hours and will focus on the review of the clinical issue.

Presentations (20 minutes each) include:

5 minute introduction: Dr. JA Fogarty

1. Dr. Bill Tarver: Clinical Overview (Dr. Polk as back up)
2. Dr. Bob Gibson: Ophthalmic review
3. Drs. Ashot Sargsyan & Doug Hamilton: Imaging
4. Discussion (25 minutes)

The second panel will also be 1.5 hours.

Presentations (20 minutes each) include:

5 minute introduction: Dr. JA Fogarty

1. Dr. Terry Taddeo: Ops mitigations/medical requirements
2. Dr. David Alexander: Potential Role of CO₂
3. Dr. Christian Otto: Research Plan
4. Discussion (25 minutes)