Visual Impairment/Intracranial Pressure (VIIP) Monitoring and Diagnostic Capabilities Aboard the International Space Station

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I will discuss the following off-label use and/or investigational use in my presentation:

• Use of ultrasonography for ophthalmic examinations
Agenda

• Current ISS Capabilities
• Future ISS Capabilities
  – Overall Process
  – Functional Requirements Review
  – Market Survey Review
  – Product Selection
  – Implementation Schedule
Current ISS Capabilities

• Functional Vision Testing
  – Vision Questionnaire
  – Near and Far Visual Acuity
• Fundoscopy
• Tonometry
• Non-invasive Eye Ultrasound
Current ISS Capabilities

- Functional Vision Testing
  - Near and Far Visual Acuity Chart
  - Amsler Grid
Current ISS Capabilities

• Fundoscopy
  – ProVizion Optics modification of Welch Allyn PanOptic with camera
Current ISS Capabilities

- Tonometry
  - Reichert Avia Tono-pen
Current ISS Capabilities

• Non-invasive Eye Ultrasound
  – General Electric Vivid q
Future ISS Capabilities

• Functional Vision Testing
  – Vision Questionnaire (Augmented)
  – Near and Far Visual Acuity (Augmented)
  – Contrast Sensitivity (New)
  – Threshold Visual Field (New)
• Fundoscopy (Augmented)
• Tonometry
• Non-invasive Eye Ultrasound
• Optical Coherence Tomography (New)
### Future ISS Capabilities
#### Overall Process

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Future ISS Capabilities

- Near and Far Visual Acuity
- Contrast Sensitivity
  - VisionScience Software Acuity Pro
Future ISS Capabilities

• Fundoscope
  – MERGE EyeScan
Future ISS Capabilities

• Optical Coherence Tomography
  – Heidelberg Spectralis
Future ISS Capabilities

• Threshold Visual Field
  – Currently in functional requirements generation phase
Future ISS Capabilities

• Estimated In-flight Implementation Schedule
  – Acuity Pro – June 2013
  – MERGE EyeScan – Summer 2013
  – Heidelberg Spectralis – Fall 2013
  – Threshold Visual Field – Winter 2013
Thank You
QUESTION
Which of the following capabilities is not currently available on the International Space Station?

a) Fundoscopy
b) Non-invasive Ultrasound
c) Optical Coherence Tomography
d) Tonometry
e) Functional Vision Testing

ANSWER
c) Optical Coherence Tomography