

Fiscal Year:	FY 2014	Task Last Updated:	FY 08/07/2013
PI Name:	Hurst, Victor Ph.D.		
Project Title:	Assisted Medical Procedures (AMP)		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Operational and clinical research		
Joint Agency Name:	TechPort:	Yes	
Human Research Program Elements:	(1) ExMC: Exploration Medical Capabilities		
Human Research Program Risks:	(1) Medical Conditions: Risk of Adverse Health Outcomes and Decrements in Performance Due to Medical Conditions that occur in Mission, as well as Long Term Health Outcomes Due to Mission Exposures		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	77058	Congressional District:	36
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	Directed Research
Start Date:	10/01/2008	End Date:	03/31/2015
No. of Post Docs:	0	No. of PhD Degrees:	0
No. of PhD Candidates:	0	No. of Master' Degrees:	0
No. of Master's Candidates:	3	No. of Bachelor's Degrees:	0
No. of Bachelor's Candidates:	0	Monitoring Center:	NASA JSC
Contact Monitor:	Watkins, Sharmila	Contact Phone:	281.483.0395
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Flight Program:			
Flight Assignment:	<p>NOTE: End date is now 3/31/2015 per L. Milstead/HRP (Ed., 3/23/15)</p> <p>NOTE: To be extended into 2016, per PI (Ed., 8/1/13)</p> <p>NOTE: Project name change to "Assisted Medical Procedures (AMP)" from "Advanced Integrated Clinical System-Guided Medical Procedure Systems," per JSC (Ed., 7/25/2012)</p> <p>NOTE: End date is now 4/1/2014 per HRP 3/14/12 Master Task List information (Ed., 4/9/2012)</p> <p>NOTE: question of period of performance per information from PI (Ed., 11/30/2011)</p>		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Rubin, David (Wyle-Science, Technology & Engineering) Chin, Duane (Wyle-Science, Technology & Engineering)		
Grant/Contract No.:	Directed Research		
Performance Goal No.:			
Performance Goal Text:			

<p>Task Description:</p>	<p>The Advanced Integrated Clinical Systems-Guided Medical Procedure System task was to provide the Constellation Program with a robust medical procedure system that fosters both astronaut wellness and mitigates medical issues during missions to the International Space Station (ISS), the Moon (Lunar Sorties and Lunar Outpost), and outreaching planets. With the cancellation of the Constellation Program, the work for the Advanced Integrated Clinical Systems-Guided Medical Procedure System ceased at the end of Fiscal Year 2010 and the project was closed.</p> <p>At the start of Fiscal Year 2012, the NASA Human Research Program (HRP) received funding to conduct the Exploration Medical System Demonstration project (EMSD). The objective of the EMSD is to determine what medical technologies are needed for an exploration class mission and what medical informatics tools for managing evidence and decision making can be integrated into a single system to be used by crew in an efficient and meaningful manner. The EMSD will be coordinated by the HRP Element called the Exploration Medical Capability (ExMC) Group who will utilize the International Space Station (ISS) as a test-bed to evaluate these technologies, informatics tools, and components.</p> <p>The EMSD will consist of two phases: 1) A ground phase where all capabilities will be tested in a ground-based exercise in 2014 and 2) a space flight phase where some of the capabilities from the ground phase will be tested aboard the ISS in 2016. Included in both phases is an electronic ("paperless") medical procedure system called the Assisted Medical Procedures (AMP) that will help crew both select a medical procedure as well as guide them through the procedure. The system will be used for all medical encounters, especially during periods of exploration missions when contact with ground resources (e.g. flight surgeon) will either be minimal or absent (i.e. autonomous medical care).</p> <p>Development of the AMP will be accomplished by generating an operational concepts (OpsCon) document, creation of requirements, procuring of hardware/software (if necessary), and generating corresponding drawings to produce the components of the system.</p>
<p>Rationale for HRP Directed Research:</p>	
<p>Research Impact/Earth Benefits:</p>	<p>It is anticipated that the development of the AMP will result in innovations to interfaces with wireless medical peripherals (e.g. ECG monitors, pulse oximetry), informatics tools (e.g. electronic medical record, middleware), and to autonomous medical care in austere environments.</p>
<p>Task Progress:</p>	<p>Documentation and Development: The AMP was initially being developed as part the Advanced Integrated Clinical System (AICS)-Guided Medical Procedure System for the Constellation Program. The Exploration Medical Capability (ExMC) team generated an Operational Concept (OpsCon) document and, subsequently, a set of functional and technical requirements. All of these documents were reviewed and approved by the Johnson Space Center Space Medicine Configuration Control Board in 2009 and 2010, respectively. These documents were then archived when the Constellation Program was canceled in 2010.</p> <p>Fiscal Year 2012 (FY12) brought the start of the EMSD project and the initial development of the AMP. ExMC generated a new OpsCon document for the AMP to reflect how it would be used for the EMSD. This document was approved by the ExMC Advisory Board and then used to generate functional and technical requirements. These requirements were reviewed by the ExMC Advisory Board and during the EMSD's System Requirements Review in March 2012. The ExMC Team then used the finalized requirements to determine that a product made by software developers within NASA was applicable. The product, a system called WebPD, has architecture relevant to the EMSD project and is being modified for integration with potential EMSD components. The approach for modifying and integrating the AMP into the EMSD was finalized during the EMSD Preliminary Design Review in June 2013. The AMP, along with other EMSD components, is being prepared for the ground phase of the EMSD, which is currently set for June 2014.</p> <p>Conclusion: The work by the ExMC team over the past year has enabled them to (1) identify a software system that can be modified to become the AMP system for the EMSD and (2) begin modifying the AMP for integration with other EMSD components. This work immediately addresses CPR Risks #17 and #23 and enables ExMC to better address CPR Risks #17, #20, #22, and #23 in the coming fiscal year.</p> <p>The objectives for FY14 are to (1) generate the first iteration of the AMP and (2) conduct an evaluation of this AMP's capability in an analog environment that mimics an exploration-class mission.</p>
<p>Bibliography Type:</p>	<p>Description: (Last Updated: 07/01/2015)</p>