

Category	NASA Project	<u>Comments</u>
	<p>Notes: The projects listed below are ACTUAL challenges set by NASA, and are listed at: https://humanresearchwiki.jsc.nasa.gov/index.php?title=Category:Gaps</p>	
Health/Medicine	Inadequate information on preflight medical screening capabilities for exploration class missions	https://humanresearchwiki.jsc.nasa.gov/index.php?title=1.01
Health/Medicine	We do not know the quantified mission and crew health consequences due to medical events for exploration - class missions	https://humanresearchwiki.jsc.nasa.gov/index.php?title=2.01
Modeling/Simulation /Medical IT	We do not know the optimal training methods for in-flight medical conditions identified on the Space Medicine Exploration Medical Condition List taking into account the Crew Medical Officer's clinical background	https://humanresearchwiki.jsc.nasa.gov/index.php?title=3.01
Sensors/Imaging	Inadequate information on capabilities for in-flight screening and diagnosis of conditions on the Space Medicine Exploration Medical Condition List	https://humanresearchwiki.jsc.nasa.gov/index.php?title=3.03
Sensors/Imaging	Lack of guided medical procedure system that integrates with medical hardware	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.01
Sensors/Imaging	Limited non-invasive diagnostic imaging capability and techniques to diagnose conditions on the Space Medicine Exploration Medical Condition List	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.02
Musculoskeletal	Limited capability to treat back/neck pain and injuries in the space flight environment	

Medical Devices	We do not know what technologies can be used to provide supplemental oxygen to ill crewmembers from onset of illness through landing and recovery and also minimize the local and cabin oxygen buildup to avoid increasing the risk of fire	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.04
Value-driven Engineering	Lack of minimally invasive in-flight laboratory capabilities with limited consumables required for diagnosing identified Exploration Medical Conditions	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.05
Musculoskeletal	Limited capability to stabilize and treat bone fractures	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.06
Cardiovascular/ Soft Tissue Wound Healing	Limited wound care capability to improve healing following wound closure	-
Musculoskeletal	Limited capability to treat muscle, ligament, and tendon injuries	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.08
Health/Medicine	Lack of medical suction and fluid containment capability for chest tube and airway management in partial gravity and microgravity environments	
Health/Medicine	Limited dental care capabilities	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.11
Health/Medicine	Lack of in situ intravenous (IV) fluid generation and resource optimization capability	
Sensors/Imaging	Limited capability to diagnose and treat a renal stone during an exploration mission	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.13

Modeling/Simulation /Medical IT	Lack of efficient medical consumable inventory tracking system that provides data on overall usage and usage rate and integrates securely with vehicle inventory management system	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.14
Modeling/Simulation /Medical IT	Lack of medication usage tracking system that includes automatic time stamping and crew identification	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.15
Health/Medicine	Lack of adequate protection for medications to preserve stability and shelf-life in exploration class missions	
Sensors/Imaging	Limited biomedical monitoring capability for exploration extravehicular activity suits	
Sensors/Imaging	Limited biomedical sensing capabilities for intravehicular activities (such as performing periodic clinical status evaluations and contingency medical monitoring)	
Health/Medicine	Limited eye wash capability to treat chemical eye exposure in partial gravity and microgravity environments	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.21
Sensors/Imaging	Limited capability to diagnose and treat radiation sickness	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.22
Sensors/Imaging	Limited capability to auscultate internal sounds of the body in a noisy, space flight environment	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.23
Modeling/Simulation /Medical IT	Lack of knowledge regarding the treatment of conditions on the Space Medicine Exploration Medical Condition List in remote, resource poor environments	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.24

Health/Medicine	Lack of capability to deliver medication to a crewmember in a pressurized suit	
Sensors/Imaging	Limited capability to diagnose and treat pulmonary or systemic disease due to non-terrestrial dust exposure	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.26
Health/Medicine	Limited capability to sterilize medical equipment in space flight	https://humanresearchwiki.jsc.nasa.gov/index.php?title=4.27
Modeling/Simulation /Medical IT	Lack of end-to-end medical data management infrastructure for exploration class missions	