Medication and Medical Consumables Tracking for Exploration

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The Vision for Space Exploration outlined a new direction for NASA, consisting of returning astronauts to the Moon and then exploring Mars. These longer duration missions require that adequate medical supplies be flown. The Exploration Medical Capability (ExMC) Element of the Human Research Program (HRP) works to mitigate the inability to diagnose and adequately treat an ill or injured crewmember. In order to treat an ill or injured crewmember the proper supplies have to be available in the necessary quantities. As an ISS demonstration prior to deploying the technology on exploration missions, the Medical Consumables Tracking System will provide inventorying capability for flight surgeons and On-orbit Inventory Storage Team to determine medication or medical consumable usage rates. This will assist in determining the quantity of medicine and medical supplies needed for long duration missions.

The Medical Consumable Tracking (MCT) System will inventory individual items (medications and medical consumables) and the usage of those items using Radio Frequency Identification (RFID) technology. Each medical consumable and medication will have a RFID tag. The tag will be programmed with a unique tracking identifier. This information will be tied to a database. Additional information can be loaded onto the tags, if necessary. The tag contains an integrated chip (IC) and an antenna. Information on the tag will be read by the reading antenna. The items will be placed inside a kit. The rack that stores all the crew medical supplies will have a reader antenna attached to it so that a medical kit is read when placed into the rack. On ISS, this rack is the CheCKs Rack. When a medication or medical consumable is needed, the crewmember will locate the rack that contains the medical kits. They will remove the desired medical kit from the rack. After the crew member has accessed the kit and removed the needed items, the kit will be placed back into the rack. Once a month, the MCT system will wake up and conduct and inventory. The system will interrogate the medical kits and the system will be updated with the status of the medications and medical consumables. Any changes in the contents will be recorded. The information collected will be securely downlinked to protect privacy.