Challenges of Life Support - Medical Support for Manned Space Exploration (9)
Challenges of Life Support - Medical Support for Manned Space Exploration (2)

Author: Mrs. Zhili Tang
Space Institute of Southern China(Shenzhen)China Astronaut Research and Training Center, China, tangzhili0928@163.com

Mr. Fengji Liang
China Astronaut Research and Training Center, China, freejohnnyliang@gmail.com
Dr. Andong Wu
Space Institute of Southern China(Shenzhen)China Astronaut Research and Training Center, China, antoniohy@163.com
Dr. Yanhong Yuan
China Astronaut Research and Training Center, China, yyh_yuan@163.com
Mr. Lunjun Gong
Shenzhen Taikon Health Technology Co., Ltd, China, 42889743@qq.com
Mr. Zhengzhi Ning
Shenzhen Taikon Health Technology Co., Ltd, China, wadihy@spacesino.com
Mr. Zhanchun Pan
China Astronaut Research and Training Center, China, dnam2016@163.com
Prof. Jianghui Xiong
China Astronaut Research and Training Center, China, laserxiong@gmail.com
Prof. Yinghui Li
China Astronaut Research and Training Center, China, yinghuidd@vip.sina.com

DEVELOPMENT AND APPLICATION OF HEALTH DATA INTEGRATION AND MANAGEMENT SYSTEM IN HUMAN-ENVIRONMENT EXPERIMENT

Abstract

Objective: Based on the needs of "4 Subjects 180 Days CELSS Integration Experiment" conducted at Shenzhen from June to December of 2016 and building human-environment data collection and coordination center in Space Institute of Southern China (Shenzhen), we developed health data integration and management system in human-environment Experiment. Real-time data integration and management of involving medical research was realized, such as physiology, psychology, biochemistry, epigenome, metabolomics, gut microbiome and immune repertoire, which ensure data traceability, reliability and promote the effective development of extravehicular medical support and psychological support. Methods: We have developed a computer-aided system, which was based on B/S (Browser/Server) with no needs of installation. This system includes project managementtask management, data management, experimental support, samples management, user management. It can record a series of physiological data involving cardiovascular function adaptability, biological rhythms, sleep, bone, muscle, brain function, traditional Chinese medicine construction during 180-day isolation. It can also record the data of psychology, molecular omics, biochemistry, habitability, sound environment, emotion and so on. In addition, the whole process management of data and biological samples was recorded, which consists of updating data by crewmembers, distributing data by staffs and auditing data by project leaders. Results: We managed to manage the data and trace the samples of medical system from 4 Subjects 180 Days CELSS Integration Experiment. The data includes medical projects, nutrition, medical support, psychological support and 6

types of biological samples. We could also make instant analysis and interpretation of basic physiological data, apart from the storage and management of data. Conclusions: With its practicality, optimization of experiment management processesreliable data, full range traceability of datacontinuing track of individual's multidimensional health parameters , this system can meet the need of mission. Key words: B/S; data management system; space medicine