

Non-invasive Technology for Health Monitoring: The Dentist on Mars

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Space agencies are responsible for critical health issues including oral health that will be experienced by space personnel during short and long missions away from the Earth. Ground based activities are used to study space related issues and to prepare the astronauts as much as possible for the physical and mental burdens associated with long duration space missions. For streamlined health monitoring purposes, human space missions to Mars and beyond require the development of non-invasive devices that can offer inclusive pre-flight, in-flight and after flight diagnostic work-up and monitoring potential for the benefit of the health of Marsonauts and astronauts. Often, the dentist is the first person who has access of oral cavity and saliva and therefore use should be made of this fact. Currently, there are a number of saliva based technologies available for health monitoring. The main criteria

for these devices is that they should include the ability to handle small samples of saliva, be easy to handle, non-invasive, provide real time results and be comfortable and produce no side effects for the user.

It is well known that one can detect and measure practically any biomarker in saliva, including future biomarkers that may emerge. Saliva specimens are non-invasive, non-infectious, and can provide rapid health assessment information that can be critical for urgent medical issues for astronauts/Marsonauts that may arise during EVA, prior to removal of the spacesuit as well as during space missions. In addition to interplanetary mission applications, such device, we predict, will have applications for health care on Earth, particularly in remote areas, or in cases where no laboratory or equipment is available.

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