Tele-echocardiography Use: on Earth and in Space

M Balasingam, Kajang Hospital, Selangor, Malaysia

Introduction

The field of tele-medicine has carved a niche in health care medicine globally due to the increasing number of 'e-patients'. Using cloud technology, many distant locations in the world can be better contacted and therapy offered to patients cutting travel time, cost as well as relieving the extensive shortage of health-care professionals. This concept also applies to tele-echocardiography which is utilized on the International Space Station (ISS) that orbits the earth. This is challenging as the characteristics and performance of the cardiovascular system undergoes changes in the environment of prolonged microgravity in space

Aim

To study a new system of performing echocardiography where operators need not be experts

Methods

Studies conducted by the European Space Agency have used remotely controlled ultrasound systems allowing expert specialists on earth to remotely perform echocardiography on astronauts in space. Patients are examined remotely via a robotic arm and an internet connection. Images are beamed back to earth in real time to be interpreted by experts (Figure 1).

Results

The system was successful in that it provided advanced, accurate cardiac diagnosis in space for astronauts.

Conclusion

With rapid surge in scientific research, new data and discoveries as well as space exploration such as the journey to Mars planned by the National Aeronautics and Space Administration (NASA), it is invariable how long distance consultations, guidance and even remote controlled examinations are going to be viewed in the near future. As such, tele-echocardiography holds great promise for future enterprising innovations of mankind.

Figure 1

References:

Space for health

http://www.esa.int