



SPACE NURSING-A VISION

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ABSTRACT

Space nursing is the nursing speciality that studies how space travel impacts human response patterns. Similar to space medicine, the speciality also contributes to knowledge about nursing care of earthbound patients. Since the beginning of commercial aviation in the 1920s, nurses have been part of aviation and flight. In 1958, President Eisenhower signed the National Aeronautics and Space Act to form NASA. Part of this act was to recruit nurses to work closely with medical teams to determine the fitness of astronauts for space exploration. Nurses helped observe the effects of spaceflight on astronauts upon their return from missions.

INTRODUCTION

Beyond space missions, the majority of aerospace nurses today provide critical and emergency care during transport for patients who are air evacuated. These nurses are trained to tackle with the unique challenges of patient care in an unstable setting with limited resources. In addition, nurses have to know how to deal with decompression sickness that frequently happens in flight.

DEFINITION

Space nursing is a specialty that works with astronauts to determine medical fitness for their missions equips NASA team members to manage emergencies in track and researches the effects of space travel on the human body [4].

HISTORICAL

BACKGROUND

Since the beginning of commercial aviation in the 1920s, nurses have been part of aviation and flight. In 1958, President Eisenhower signed the National Aeronautics and Space Act to form NASA [1]. Part of this act was to recruit nurses to work jointly with medical teams to find out the health of astronauts prior to launch. Following their return, nurses assisted with performing medical assessments to determine the outcome of space travel on the mission team.

Two nurses, Lt Delores O'Hara and Lt Shirley Sineath, were assigned to work with the first seven astronauts of Project Mercury and to develop emergency hospital kits for the astronauts [2]. These nurses had to clinch that the astronauts could manage casualties, plan for disaster control and provide first aid to save lives.



Delores O'Hara



Shirley Sineath

HOW TO BECOME A NASA NURSE

The first step toward becoming a NASA nurse is obviously to become an RN. To become an RN, have to graduate from a program of study that is approved by state Nursing Board - either a bachelor's or associate degree program. Upon completion and have to pass the NCLEX-RN. Because aerospace nursing is so specialized, might consider becoming a military flight nurse with the Air Force in order to break in since they deal with pilots and high-tech flight[3]. Another way is to pursue civilian flight nurse training.

In 1991, the Space Nursing Society was founded by Linda Plush with the help of Dr. Martha Rogers . It is based on Rogers' Theory, the Science of Unitary Human Beings, as it is believed that this could provide a unique understanding of life and health in space (Corbett, 2007) [2].

Finally, many innovations developed with the help of NASA nurses have made their way into everyday use both in the medical field and out.

Examples include:

- Velcro (fasteners were widely used on the astronauts' space suits to secure pockets, food and drink ports, checklists and other essential items)
- The ear thermometer (so astronauts could get temperatures in 3 seconds rather than 5 minutes).

- Heart, blood pressure and oxygen saturation monitoring.
- A pump used for a Viking landing that is now used for continuous insulin delivery [2].
- CT scans, MRIs, low density X-rays [2].
- Microbe detectors.
- Programmable pacemakers.

As the future brings us closer to the possibility of living at a lunar space station, and as the distances traveled by astronaut's increases, a more self-sufficient medical system will be needed [2]. This would involve a team of nurses with a broad set of skills and the potential to communicate in the same medical, scientific and usual language as their team members. These nurses will be in space and will therefore require being experts in infection control, aseptic technique, and emergency procedures (Czerwinski, Plush & Bailes, 2000). The future is in point of fact bright for nurses in space.

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MEDICAL COMPLICATIONS SURROUNDING SPACE TRAVEL

Problems emerging during or upon return from space flight [7].

- Lightheadedness
- Deterioration of proprioception (ability to sense the movement and location of one's body)
- Slower wound healing
- Immune system suppression
- Muscle atrophy
- Reduction in bone density
- Facial swelling
- Height increase
- Low blood pressure
- Fainting
- Blurred vision
- Poor nutrition: weight loss, dehydration
- Disruption to sleep patterns
- Fatigue
- Poor coordination
- Possible decreased fertility

Complications that can develop years later

- Cancer due to radiation
- Hyperthyroidism
- Cataracts

THE FUTURE SPACE OF NURSING

There are many new devices and techniques, either in the process of research and development or already in use, to improve space medicine [6].

A few examples are:

- Remote/ telepresence surgery- a surgeon on earth controls robotic instruments that are physically performing the surgery in space
- Computer-Assisted Design and Computer Assisted Manipulation (CAD-CAM)- medical supplies assembled by technology using specification data contained on board or communicated from Earth
- Telemedicine- high quality pictures of injuries or symptoms experienced in orbit sent to a doctor on Earth who is then able to diagnose and recommend treatment without being physically present.
- Devices that make medicine- the shelf life of many pharmaceuticals are not long enough to remain viable for long-term missions. Researchers are considering technology that manufactures drugs from stored substrates as they are needed by astronauts.
- This would include a team of nurses with a wide set of skills and the potential to communicate in the same medical, scientific and usual language as their team members. These nurses will be in space and will therefore need to be experts in infection control, aseptic technique, and emergency procedures (Czerwinski, Plush & Bailes, 2000). The future is indeed bright for nurses in space [2].

IMPLICATIONS OF SPACE NURSING ON EARTHLY MEDICINE

In 2018, Dr. Serena Auñón-Chancellor completed a six-month space expedition to collect samples of her body fluids to be analyzed on earth. Her research has led to new knowledge and feasible treatment breakthroughs for osteoporosis, Parkinson's, cancer and fertility.

SPACE NURSING SOCIETY

The Space Nursing Society is an international space advocacy organization dedicated to space nursing and space exploration by registered nurses. The society is an affiliated, non-profit special interest group associated with the National Space Society [4].

The society was founded in 1991 and society has members from around the world including Australia, Canada, Czech republic, England, Germany, Greece, Scotland and the United States (US) [8].



ROLE OF SPACE NURSE

- Ground-based monitoring of astronauts' health (flight nurses).
- Full range of health services to >400 astronauts including screening to determine if NASA health and military stipulations are met.
- Nurses have been coordination of dietary and fitness services.
- "Sick call" service: whenever an astronaut first feels physical discomfort before or after a launch the nurse is called first to provide appropriate treatment.
- Support staff for proctology and cardiovascular clinics.

- Instructors in the basics of self-assessment and medical administration for astronauts.
- Nurse researchers who study the health risks associated with space travel [9][10].

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