Bacterial isolation garment

A spinoff of the astronaut's biological isolation garment will allow hospital patients who are highly vulnerable to infection to leave their sterile habitats. The garment is designed to prevent hospital-acquired infections by isolating patients from the environment. It is worn for several hours, carrying their germ-free environment with them. The prototype isolation garment has been tested in hospitals and by the National Cancer Institute with favorable results. It is a coverall-type suit designed to prevent or remove viruses and bacteria from patients and the environment around them.

As a comparison, the prototype isolation garment is an extension of a biological isolation garment already tested in space. The garment is designed to be worn near rocket launches and return to Earth. It was meant to protect the environment against unknown microorganisms from the moon—an uncertain precaution when men visit the moon. A separate hood with transparent face mask is attached to the suit. Air is supplied through a filter-blower system powered by rechargeable batteries. Positive air pressure maintains the patient's isolation while entering the patient isolation area.

The garment is also a modified version of the biological isolation garment and can be adjusted to patient isolation rooms. The design has been extended to a protective isolation room for all hospitals. The Atlanta, Georgia, model projection will incorporate the model's use of some 200 hospitals where isolation rooms can be used in any environment. The Atlanta, Georgia, model projection is intended for use in any environment, including the protected housing of immune-deficient patients. In these cases, for instance, it is responsible for treating patients in acute leukemia.

White blood cells and bone marrow now can be stored for future use by leukemia patients as a result of this new technology. The Atlanta, Georgia, model projection has been developed by the Atlanta, Georgia, model projection, and is available to the Atlanta, Georgia, model projection.

White blood cells are collected from the patient's bone marrow. The patient is then treated with chemotherapy to destroy the cancerous cells. The white blood cells are then stored and used to restore the patient's immune system when needed. The Atlanta, Georgia, model projection has been developed by the Atlanta, Georgia, model projection and is available to the Atlanta, Georgia, model projection.

The Atlanta, Georgia, model projection has been developed to provide an effective method of storing white blood cells for future use. The Atlanta, Georgia, model projection has been developed to provide an effective method of storing white blood cells for future use. The Atlanta, Georgia, model projection has been developed to provide an effective method of storing white blood cells for future use.
Immune-deficient child leaves hospital sterile room for up to four hours carrying germ-free environment with her in a modification of the astronaut's isolation garment. The garment was developed originally to be worn between spacecraft landings and quarantine as a precaution against carrying unknown microorganisms from the moon. The spinoff is intended for children with aplastic anemia, leukemia, or other disorders requiring a sterile environment.

White blood cell- and bone-marrow bank can be established using freezing unit that emerged from NASA electronics and cryogenics research. Freezing system monitors temperature of the cells themselves and the system maintains a consistent freezing rate. Ability to freeze, store, and thaw white cells and bone marrow without damage is important in leukemia treatment.
Engineers at JPL proposed a solution to the blood-cell freezing problem first identified by the Research Triangle Institute Biomedical Application Team during discussions with the National Cancer Institute. JPL’s solution utilized a special electronic circuit developed for precise temperature control of scientific instrumentation now on its way to Mars on board the Viking spacecraft. JPL then turned the idea over to the Goddard engineers for implementation, since the Goddard Center was geographically more convenient to the National Cancer Institute.

The freezing unit monitors the temperature of the cells themselves. A thermocouple placed against a polyethylene container relays temperature signals to an electronics system, which in turn controls small heaters located outside of the container. The heaters allow liquid nitrogen to circulate at a constant temperature and maintain a consistent freezing rate.

Freezing white blood cells is important in leukemia work. There are more than 80 types of white cells, making patient-donor matching difficult. Storage life of unfrozen white blood cells is only a few hours.

The Goddard freezer, which was delivered last year to the cancer institute, can freeze up to 220 ml of white blood cells in one hour. Animal bone marrow also is being frozen by the unit for transplant research. Results so far are encouraging.

**Better physician’s ‘black bags’**

There’s a limit to what a physician can carry in his “black bag.” But NASA-Johnson is extending that limit dramatically by transferring technology accrued through monitoring of astronauts’ vital signs.

The development is evolving now in preparation for providing diagnosis and treatment of space-shuttle crew and passengers. Of course it can be adapted to aircraft, shipboard, and physician emergency calls too.

The portable medical-status system contains an electronic vital signs monitor, a cassette machine for recording electrocardiograms and electroencephalograms, equipment for minor surgery, as well as conventional diagnostic instruments such as the stethoscope, and drugs.

The big job was to make it all portable. Liquid-