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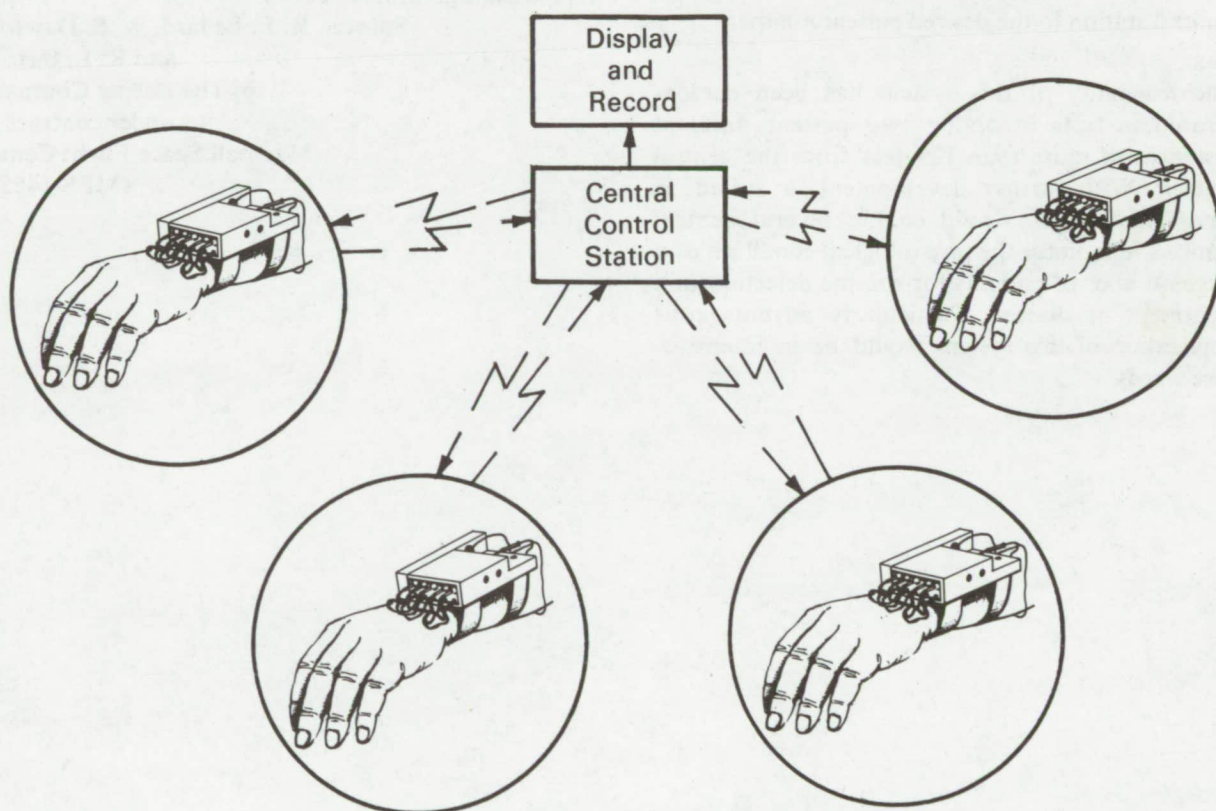
Brief 68-10131

# NASA TECH BRIEF



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## Automated Patient Monitoring System



A radio-linked patient monitoring system (designated "Automated Patient Care System"), which has been designed and placed into operation for feasibility testing, is capable of collecting several channels of physiological data from as many as 64 hospital patients and transmitting the data to a central control station. The information is transmitted in digital form which can be directly processed by a computer.

The system consists of a central control station and battery-operated patient units comprising small strap-on electronics packages designed to ensure minimum encumbrance and discomfort to the patients, who may be either ambulatory or bedridden. A complete patient unit including battery weighs less than one pound. Conventional biomedical sensors are associated with each patient unit. Typically, sensors include

(continued overleaf)

4 electrocardiogram electrodes, 2 thermistors for temperature measurement, and a strain gage consisting of a mercury-filled silicone rubber tube which is slipped over a big toe or a thumb to monitor blood pressure pulsations.

The central control station and patient units share a single broadcast frequency pair. A patient unit is not active until it is interrogated by the control station and signaled to transmit its data for central display and recording. During normal "all patients" operation, each of the patient units in the system is interrogated in turn for two seconds by a coded message from the central control station. In this period, the patient unit addressed transmits its data to the central station for display and/or recording. In the "single patient" mode of operation, any patient can be continuously monitored by setting a selector switch in the central station to the desired patient number.

**Notes:**

1. The feasibility of this system has been demonstrated in tests involving two patient units at distances of more than 125 feet from the central station. With further development, a system is envisioned which would enable several central stations to monitor the physiological condition of a large number of patients for routine detection and treatment of disease. Particularly advantageous application of this system would be in intensive-care wards.

2. With appropriate selection of transducers and signal conditioning circuitry, the system could be used to monitor a wide variety of industrial processes.

3. A related multichannel implantable telemetry system is described in Tech Brief B68-10065.

Inquiries may also be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
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**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: R. E. Bedard, W. S. Dawson,  
and R. L. Buxton  
of The Boeing Company  
under contract to  
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