

X. COMMUNICATIONS BIOPHYSICS

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A. DESIGN OF NURSING-HOME TELEMEDICINE SYSTEMS

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T. R. Willemain, R. G. Mark

Nearly one million Americans live in nursing homes, and this number is increasing as medical technology cuts mortality rates. Public expenditures for nursing-home care are large: over \$100 million of the Massachusetts Medicaid budget is allocated to nursing homes each year. But despite the number of people involved and the expense of their care, medical coverage of nursing home populations is typically inadequate.

An experimental nursing-home "telemedicine" project is under way at Boston City Hospital to explore the advantages of providing medical care in nursing homes visited by geriatric nurse practitioners, with remote physician consultative support provided by telephone and facsimile equipment. It is hoped that such a system will allow nursing-home patients to receive close follow-up care in the nursing homes and eliminate the risks, costs, and inconveniences of treating acute illnesses only in the hospital on an emergency basis.

A research program is beginning that will attempt to develop a methodology for design of telemedicine systems for nursing homes throughout the country. Questions to be addressed include:

What patient load can be assigned to each nurse practitioner?

How many consultant physicians are required to supervise a given number of nurse practitioners?

What skills are desirable in nurse practitioners?

How can nursing-home patients be classified in terms of their medical needs?

How can the mix of patient types alter workload assignments?

What is the proper mix of communication and transportation facilities?

What noneconomic performance measures are obtainable, reliable, and meaningful in a nursing-home context?

To explore these and other questions, a data collection effort is under way to determine the total costs of nursing-home care, hospital usage by different groups of nursing-home patients, and time and motion studies of nurse practitioners. In time, these data will be incorporated into mathematical models useful in designing nursing-home telemedicine systems tailored to various demographic, geographic, and clinical environments. It is expected that these models will evolve from earlier work on modeling telemedicine systems for ambulatory care.