

**IT and Public Policy Symposium:  
*Addressing the Healthcare Needs of our Aging Population with  
Technology***

IEEE-USA Medical Technology Policy Committee  
Geriatric Care Information Technology Working Group

**Introduction**

This report summarizes the findings and recommendations provided by a leading group of geriatric care and scientific scholars at a one-day symposium on June 4, 2004. The symposium goal was to address the healthcare needs of our aging population and to review current technology and recent advancements in geriatric care.

The general recommendations of the symposium are to:

- Provide new incentives to encourage physicians to specialize in geriatric care, including financial incentives, regulatory changes and access to technology-based efficiencies
- Incorporate information technologies with enhanced communication capabilities into patient care management
- Utilize remote sensing to promote efficient and effective patient management between office visits and encourage adoption of home self-care management programs
- Make payment methodologies and staff training more effective and more focused on geriatric healthcare needs through the incorporation of innovative technological enhancements

The symposium also developed specific recommendations from the perspectives of the geriatric population, caregivers, medical professionals, and other medical support areas including medical facility and insurance providers and IT system and device makers. Included under these areas are recommendations to:

- Revise regulations supporting medical benefits aimed at assuring the maximum possible independence of patients in obtaining healthcare
- Strengthen legislation to support autonomy by patients that allows them to make decisions, including clearer guidelines on advanced medical directives
- Provide additional safety information to patients
- Provide funding to verify that specific technology tools and processes, especially those that allow home healthcare, actually lower the cost and improve the outcomes of healthcare service
- Provide liability support for informal caregiver support at home using technology advances
- Offer improved healthcare training and certification for caregivers using technology based services

- Introduce a publicly available automated service for maintaining medical records reachable by all designated physicians and patients similar to the baseline system and service now found in most medical facilities provided by the Department of Veteran Affairs
- Encourage establishment of a national healthcare system information exchange standards, and require their use
- Support reasonably inexpensive offering of tests now available nationwide that can reduce strokes and lower blood pressure or heart disease problems prevalent within the elderly community
- Fund education in use of new advanced technology in aging population healthcare areas.
- Evaluate priority testing concepts for merits in offering new services to the elderly
- Develop Medical Device Checklists
- Offer laminated information cards attached to all medical devices used in a home environment
- Develop an Infusion Therapy Website (for pumps that maintain drip medication) to assist home caregivers

One very important conclusion of the symposium, reinforced by the luncheon speaker, Dr. Gene D. Cohen, author of *The Creative Age*, is that an important measure of the utility of technology to support the geriatric population is the degree to which that population remains an engaged, vibrant, and contributing part of the community. Homecare technologies, in particular, may provide major lifestyle benefits to the elderly, and to the community, by allowing the elderly to remain in and contribute to the community.

The symposium focused on the role of computer, communications and other electronic technologies to improve the quality and cost-efficiency of geriatric healthcare. The symposium's findings and recommendations are presented as support to our legislators, policy experts, and regulators so that the voids in serving the healthcare needs of our aging population can be readily identified. The symposium provided recommendations to fill these voids using information technology, legislative and regulatory initiatives, and medical training and education changes. This report focuses on the greatest opportunities for improvement in geriatric healthcare based on technology applications and public policy changes, and it makes recommendations for establishing a unified national home health care agenda.

Active contributors to this white paper included the IEEE USA's Medical Technology Policy Committee's Geriatric Care Working Group, formed in 2003, and other leaders in the geriatric and technology fields that were invited to the symposium to share their current knowledge on the subject. The symposium also was intended to develop contacts to coordinate future actions.

Session speaker charts are available on-line at the symposium web site (<http://www.ieeeusa.org/conferences/geriatrictech/>). Speakers and contributors representative of the public sector, industry, the government, and academia all participated in this effort.\* It is anticipated that this symposium represents only the first of a series that can be used for developing a clearer understanding of the issues that our nation and the world will face given the expected increase in our elderly population.

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\* Sampling of Organizations supporting the Symposium: Intel, HHS, NIH/NLM, DoD, CDRH/FDA, Monroe County (Rochester, NY) Long Term Care Program, Inc., National Rehabilitation Hospital, Virginia Commonwealth University, University of Virginia's Medical Automation Research Center, University of Michigan, Marcella Niehoff School of Nursing, Loyola University-Chicago, NY State College of Ceramics at Alfred University, Carnegie Mellon University, and several independent consulting firms.

### **Urgency in Healthcare for the Aging**

The arrival of the Baby-Boom generation has created an unparalleled urgency for understanding and expanding our national geriatric medical service. Within this decade it is expected that our 60+ population will more than quadruple [Census 2000]. More than 75 million within our nation's population will reach retirement age before 2010. The effect of this demographic shift will place additional pressures on healthcare providers—Geriatric Specialists are already in short supply. This increase in healthcare needs for our aging population by 2010 only exacerbates the problems we are currently facing. Use of healthcare services and the associated cost will not only increase as healthcare inflation outpaces overall inflation, but will disproportionately increase as seniors take advantage of an expanding array of new technologies for managing chronic illness and promoting active lifestyles. Provider reimbursement, changing Medicare and Medicaid regulations and uncertainty of our present Social Security and Healthcare funding add to the concerns.

### **Recommendations for Action**

As scientists, engineers and technologists, the symposium participants concluded that use of information technology combined with enhanced communication capabilities and use of remote biomedical monitoring can promote cost effective care management and improve patient safety. Many participants stated that national savings on healthcare can be realized immediately if a national effort is made to keep the elderly self-sufficient and able to support their healthcare needs at home rather than in an assisted living or nursing care facility. Every effort should be made to support this goal – if successful, it will tend to pay for itself within the decade.

The Geriatric Working Group and the symposium attendees and presenters recommended a number of actions from the perspectives of Patient, Caregiver, Medical Professional, and Healthcare/Medical Facility Provider and healthcare insurer. A summary of these recommendations follows:

#### **General Recommendations:**

- Provide new incentives to encourage physicians to enter Geriatric Care Specialization, including technology based efficiencies, financial incentives, and regulatory changes
- Incorporate information technologies with enhanced communication capabilities into patient care management
- Utilize remote sensing to promote efficient and effective patient management between office visits and encourage adoption of home self-care management programs
- Make payment methodologies and staff training more effective and more focused on geriatric healthcare needs through the incorporation of innovative technological enhancements

#### **Specific Recommendations:**

The attendees created a consensus for action from the perspectives of the geriatric population, caregivers, medical professionals, healthcare and medical facility providers, and healthcare insurers:

### **Geriatric Population Perspective:**

- Revise regulations supporting medical benefits aimed at assuring the maximum possible independence of patients in obtaining healthcare (Home healthcare and preventive medicine testing and services must be directed and included within cost from insurers and Medicare providers).
- Strengthen legislation to support autonomy by patients that allows them to make decisions without risk of losing benefits
- Provide additional safety information to patients - patients want and demand more information to help them in deciding which medical facilities and professionals have the highest safety records. For example, establish a national database, accessible to the public, through the National Healthcare Information Infrastructure initiative.

### **Caregiver Perspective:**

- Provide funding to verify that specific technology tools and processes, especially those that allow home healthcare, actually lower the cost and improve the outcomes of healthcare service
- Provide liability support for informal caregiver support at home using technology advances
- Support the integration of all medical information using technology to assure privacy
- Fund the study of outcomes resulting from improved home nursing support
- Offer improved Healthcare Training and certification for caregivers using technology based services

### **Medical Professional Perspective:**

- Introduce a publicly available automated service for maintaining medical records reachable by all designated physicians and patients similar to the baseline system and service now found in most medical facilities provided by the Department of Veteran Affairs. (Note: Security and Privacy of records can be maintained using proper gateway services between providers, such as those offered through within the government by the General Services Administration)
- Promote Smart aging vs. Non-smart aging healthcare directives on a national basis

### **Healthcare/Medical Facility Provider and Healthcare Insurer:**

- Establish a “National Public Healthcare Information System”
- Encourage increased training and testing of new technologies and systems, to augment home healthcare services and fund such training and testing
- Encourage establishment of a national healthcare system information exchange standards, and require their use
- Determine cost of offering systems using new technologies as a base
- Support training for home healthcare services
- Support reasonably inexpensive offering of tests now available nationwide that can reduce strokes and lower blood pressure or heart disease problems prevalent within the elderly community
- Fund education in use of new advanced technology in aging population healthcare areas
- Evaluate priority testing concepts for merits in offering new services to the elderly

### Other Areas that can Assist Elder Healthcare Needs

Support is needed on a national level for many minor items that are found to be useful to supporting the elderly healthcare needs from the various perspectives listed above. These include:

- Training in all equipment to be placed in homes
- Certify all users of home equipment and Electronic Medical Records
- Offer oversight support
- Develop Medical Device checklists
- Home Care Nursing can benefit from offering of laminated information cards attached to all medical devices used in a home environment
- Development of an Infusion Therapy Website (pumps that maintain drip of medication) can help support improved home care service

### Symposium Approach

The symposium included four sessions addressing:

- (I) Healthcare needs of the elderly (including problems in meeting these needs);
- (II) Technologies available and being tested to support the needs today and in the future;
- (III) Political and regulatory barriers to meeting the needs and resolving problems, and finally;
- (IV) A symposium summary and next steps.

All attendees were invited participants chosen for their organizational role in supporting healthcare needs of the elderly. There were 49 attendees in total representing academia, the government, and industry. Of the 49, 14 were speakers on panels, however, all attendees were called upon to provide comments and discuss the issues as the symposium progressed.

Session I was moderated by Dr. Michael Rozen, the IEEE Medical Technology Policy Committee (MTPC) Chair. Dr. Rozen's panel consisted of experts from National Rehabilitation Hospital, Virginia Commonwealth University, and Intel's Proactive Health Strategic Research Program. The panel focused on the healthcare needs and problems being faced by our aging population, their physicians, and family/professional caregivers both at home as well as at service care facilities. The panel also identified potential IT support that can be introduced to assist in meeting and satisfying those needs. The three speakers for this session addressed technologies that supported health maintenance and the ability to attain functional independence by our aging population for as long as possible. In addition, they noted the economic savings potential through home care product introduction to support the healthcare needs of our aging population. They also noted that the return of homecare by the physicians directly in lieu of introducing technology may still have significant merit and should not be ignored until specific technological applications are proven through proper testing and evaluation.

Session II was moderated by the past Chair of MTPC and current Chair of the Geriatric Healthcare IT Working Group, Frank Ferrante, and independent consultant. Session panelists on this Technology oriented session included representatives from the University of Virginia's Medical Automation Research Center, Carnegie Mellon University, the University of Michigan, and the National Library of Medicine (NLM). These leading academic and government

representatives addressed specific technologies and product applications that recently had field tests and been the subject of studies. NLM has introduced a web site specifically focused to assist members of the senior age group in obtaining healthcare services from NIH physicians

and to gain access to healthcare services. The panelists described field studies illustrating the application of products that can be used to support caregiver monitoring of their subjects both at home and within assisted living facilities. The panel also discussed remote sensing devices that could support the physicians in obtaining accurate and more meaningful readings of vital signs (improved over the basic office readings since they can be measured real-time). Analysis of data taken from field studies was discussed showing how possible new thresholds could be developed to assist those caring for their patients (or for the subjects of caregivers). The thresholds could be used to predict conditions leading to situations such as falls or other serious healthcare factors to reduce the impact from these conditions. Finally, with a focus on the patient, cognitive and robotic applications of intelligent agent technology were described.

Session III's moderator was Michael Corrigan of Warren A. Suss Associates, our MTPC Vice Chair and co-chair of the symposium. This session offered speakers from the Office of Disability, Aging & Long-Term Care Policy, U.S. Dept. of Health & Human Services; the Office of Surveillance and Biometrics Center for Devices and Radiological Health, Food & Drug Administration; and New York State's Monroe County Long Term Care Program, Inc. The panel focus was on the public policy, regulatory, and legislative barriers and issues existing in applying technology to meet the healthcare needs of our aging population. Representatives gave their perspectives on policies, organizational changes now in progress, and findings from committees addressing legislative and regulatory drivers.

Finally, Session IV , was also moderated by Frank Ferrante. Its panel included Dr. Margaret Kraft, Assistant Professor, Marcella Niehoff School of Nursing, Loyola University-Chicago - representing the Patient's Perspective, Dr. Subrata Saha, Professor of Biomaterials, NY State College of Ceramics at Alfred University - representing Caregivers, Dr. Parag Dalsania, Director, Geriatric Clinic, Veterans Affairs Washington Medical Center - offering a Physician's Perspective, and Dr. Joel Nitzkin, President, JLN-MD Associates - offering his perspective on Facility and Healthcare operations. The panel summarized the day long symposium findings and laid the groundwork for preparation of this final report that will result from the work of the day.

### **Summary of Themes Emerging**

The following themes emerged for further development and study.

The lack of reliable patient-appropriate material for future home based needs of our elderly patients should be addressed. This material should include advice on obtaining sensors and monitors, and discussing their performance specifications and limitations. Such documentation would allow the patient to share responsibility with their physician or caregiver when appropriate in deciding how home based devices and systems fit into the patient's total care. Business cases and test data are needed to verify the benefits of the tools offered. The rules for such verification should address the same concerns as those that have been raised with drug studies – specifically, concerns with selective reporting of results, lack of standards, and inappropriate marketing techniques.

Caregivers need social interaction and need support to have the time to get it. Our symposium's findings backed the findings provided by the Center for Future Health White Paper (*2004 Thought Leaders' Workshop*) that indicated a need for integrated systems such as our proposed National Healthcare Information System. The white paper identified several

barriers in funding and suggested that assessment methods and technology applications need further exploration to support removal of the barriers and close the gaps. Training on technology is another key element of caregivers' needs and should be funded.

For medical professionals, the integration of medical office, medical facility, and homecare service arrangements is a critical need. Homecare data should be linked to the physician's office and records should be created that can be tracked by the physician depending need of the patient. The current recommendations we have above show a real need for funding support if this is to be nationally pursued. Products are being developed quickly, but their cost, usability, and utility must be measured and their wide-spread introduction must be based on results.

Finally, from a product developer, facility administrator, or insurance provider, there are several recommendations listed earlier.

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