

**Telehealth Breakfast Round Table  
Discussion**



**Integrating Home Telehealth into Routine  
Chronic Illness Care: Moving Forward**

**October 4<sup>th</sup>, 2004**

**Facilitator: Dr. Marilynne A. Hebert**

## CST 2004 Home Telehealth Breakfast Roundtable Discussion

### **Integrating Home Telehealth into Routine Chronic Illness Care: Moving Forward**

Monday, October 4, 2004

Facilitator: Marilynne A. Hebert, PhD

Health Telematics Unit, University of Calgary

#### **Overview**

Home care provides health services to individuals in their place of residence in order to promote, maintain or restore health, and to maximize independence, while minimizing the effects of disability or illness. Most agree this is a desirable goal, however the increase in number and complexity of clients in home care programs, as well as rising costs and limited availability of health care professionals, challenges organizations to provide these services. Home telehealth is an innovative service delivery alternative which holds considerable potential for the care of people with chronic illnesses.

We have ample evidence that on a project by project basis, individual home telehealth technologies produce benefits. Given the complexities of both the potential types of home telehealth services and home care requirements, the challenge remains to integrate the two into routine practice.

#### **Relevant Topics in the Literature**

1. Chronic Illness Care

Successful implementations demonstrated in:

- a. Congestive heart failure/COPD
- b. Diabetes
- c. Pediatric Asthma
- d. Wound Care and Management

2. What conditions contribute to the success in these areas?

- a. patient needs or care environment;
- b. clinicians buy-in, organization of care,
- c. leadership, buy-in by senior management
- d. integration into policy development
- e. technology- ease of use, cost

3. Integration into Professional Practice

4. Integration into Organizational Services

5. Influencing Policy and Decision Makers

6. Establishing Costs and Benefits

**Discussion**

What will it take to move this field forward?

1. How do we ensure each implementation contributes to the body of evidence around effectiveness in supporting positive patient outcomes i.e. the role of evaluation, sharing results and tools?
2. Would it be beneficial to incorporate these results and tools into a “home telehealth business case template”?
3. How could we present evidence to policy and decision makers more effectively?

**We have evidence of effectiveness in a number of chronic illnesses. Why not start there?**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**How does this evidence get disseminated, i.e. how do you know about the pros and cons of a particular application you are interested in implementing?**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Are there other strategies we could employ?**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**How can evidence be presented to policy and decision makers in such a way that home telehealth is considered in planning and funding?**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## **Annotated Bibliography – CST Breakfast Roundtable Discussion October 4th, 2004**

### **CHRONIC ILLNESS CARE**

#### **Value added of telehome care for COPD and CHF patients in Michigan's upper peninsula [abstract] [2003]**

**Authors:** Whitten, P., and Davis, S.

**In:** Telemedicine Journal and e-Health 9(Suppl 1): S64-5.

**Abstract:** Michigan State University, in partnership with Marquette General Home Health, is conducting a randomized control study of home health services funded by the National Institutes of Health and an MSU Pearl Aldrich Award. Specifically, health outcomes are being analyzed for Congestive Heart Failure (CHF) and Chronic Obstructive Pulmonary Disease (COPD) home health patients living in Michigan's Upper Peninsula. Methodology: Patients diagnosed with COPD and/or CHF who are prescribed home health services from a physician are randomly placed in control and experimental groups. Those in the control group receive traditional home health services and those in the experimental group receive traditional home services supplemented by telehealth nursing services on a weekly basis. A Short Form 36 (SF36) is administered to patients in the control and experimental groups to measure any changes in functional status. In addition, patients in both groups are interviewed via telephone to assess any differences in perceived quality of care. Results: The experimental group appears to demonstrate slight improvement in functional status. Severity of illness may play an important role in the potential impact of telehome health. Experimental group subjects often perceived enhanced quality of care and increased access to educational resources over control group subjects. (Abstract from The American Telemedicine Association Eighth Annual Meeting & Exposition, April 27 - 30, 2003, Orlando, Florida)

#### **Enhancing elder chronic care through technology and care coordination: report from a pilot [2003]**

**Authors:** Kobb, R., Hoffman, N., Lodge, R., and Kline, S.

**In:** Telemedicine Journal and e-Health Summer 9(2): 189-95.

**Abstract:** The Rural Home Care Project is one of eight clinical demonstration pilots in an initiative of the Veterans Health Administration (VHA) Sunshine Network in Florida and Puerto Rico. In this project three care coordinators

consisting of two nurse practitioners and a social worker collaborate with primary care providers in the management of high-risk, high-cost veterans with multiple chronic diseases such as diabetes and heart failure. The project staff uses home telehealth devices to monitor and educate patients to prevent health crises. The evaluation methodology is a quasi-experimental design that uses a nonequivalent control group of usual care veterans. Data were gathered through personal interviews with patients and providers, and statistical analysis was based on a series of repeated-measure of covariance modeling designed by a research team from the University of Maryland. Findings demonstrate that care coordination enhanced by technology reduces hospital admissions, bed days of care, emergency room visits, and prescriptions as well as providing high patient and provider satisfaction. Veterans also had improved perception of physical health as evidenced by a standardized functional status measure.

### **Telehealth: An opportunity for assisted living environments and home care [2001]**

**Authors:** Rau, K.

**In:** Remington Report Mar/Apr 9(2): 58,60,62.

**Abstract:** A look at how home telehealth may be useful for the assisted living environment. The number of individuals 65 and older living in the US is expected to increase by 135% by the year 2050, 18 million over the age of 85. Some designs for telehealth in assisted living are presented as well as some ideas for marketing.

### **A home telecare management system [1995]**

**Authors:** Rodriguez, M.J., Arredondo, M.T., del Pozo, F., Gomez, E.J., Martinez, A., and Dopico, A.

**In:** Journal of Telemedicine and Telecare 1(2): 86-94.

**Abstract:** The increasing tendency to discharge chronic patients from hospitals, as well as the growing expectation of improved quality of life for elderly and disabled people at home, was the original motivation for the development of a home telecare management system. The system allows a service center to perform remote monitoring of biological signals and other data via the public telephone network, as well as to manage different emergency situations arising at home. The system is part of the EU-funded EPIC project (European Prototype for Integrated Care). It was tested in Belfast (Northern Ireland) and is currently being installed in Torre del Mar (Spain). This paper describes the system design and preliminary evaluation. The results indicate that the system operators find it

highly acceptable in terms of efficiency, effectiveness, helpfulness, control and learnability. Integration of home telecare data with community-care information systems is essential if data captured at home are to be incorporated into the care process effectively.

**Technological innovations support care management and care coordination/home telehealth [2004]**

**Authors:** Vogel, D.C., Erdos, J., Cornwall, D., Noel, H. , Kauffman, M., McCasland, W., and Levin, F.

**In:** Home Health Care Technology Report May/Jun 1(4): 52,61.

**Abstract:** The Veterans Administration (VA) has embraced home telehealth as a solution to the core problems it currently faces: an aging, frail, medically complex patient population experiencing increased difficulty leaving their homes; the high cost of health care and changes in health care reimbursement; and the national shortage nurses to provide care.

**A telecommunications system for monitoring and counseling patients with hypertension: Impact on medication adherence and blood pressure control [1996]**

**Authors:** Friedman, R.H., Kazis, L.E., Jette, A., Smith, M.B., Stollerman, J., Torgerson, J., and Carey, K.

**In:** American Journal of Hypertension Apr 9(4 pt 1): 285-92.

**Abstract:** This study was conducted to evaluate the effect of automated telephone patient monitoring and counseling on patient adherence to antihypertensive medications and on blood pressure control. A randomized controlled trial was conducted in 29 greater Boston communities. The study subjects were 267 patients recruited from community sites who were  $\geq 60$  years of age, on antihypertensive medication, with a systolic blood pressure (SBP) of  $\geq 160$  mm Hg and/or a diastolic blood pressure (DBP) of  $\geq 90$  mm Hg. The study compared subjects who received usual medical care with those who used a computer-controlled telephone system in addition to their usual medical care during a period of 6 months. Weekly, subjects in the telephone group reported self-measured blood pressures, knowledge and adherence, SBP and DBP during 6 months, satisfaction of patient users, perceived utility for physicians, and cost-effectiveness. The mean age of the study population was 76.0 years; 77% were women; 11% were black. Mean antihypertensive medication adherence improved 17.7% for telephone system users and 11.7% for controls ( $P = .03$ ). Mean DBP decreased 5.2 mm Hg in users compared to 0.8

mm Hg in controls ( $P = .01$ ). For telephone system users, mean DBP decreased more if their medication adherence improved ( $P = .03$ ). The majority of telephone system users were satisfied with the system. Most physicians integrated it into their practices. The system was cost-effective, especially for nonadherent patient users. This system can be used to monitor patients with hypertension or with other chronic diseases, and is likely to improve health outcomes and reduce health services utilization and costs.

**Compliance and effectiveness of 1 year's home telemonitoring: The report of a pilot study of patients with chronic heart failure [2001]**

**Authors:** de Lusignan, S., Wells, S., Johnson, P., Meredith, K., and Leatham, E.S.

**In:** European Journal of Heart Failure 3(6): 723-30.

**Abstract:** Patients with a diagnosis of heart failure, registered at the study practice, were recruited into the study. First, they had a cardiologist's assessment. They were then randomized into telemonitored patients who measured pulse, BP, weight and video consulted, and controls. Aim: To examine the acceptability, effectiveness and reliability of home telemonitoring. Results: A high proportion of those invited took part ( $n = 20/24$ ). Compliance with measuring weight, pulse and BP remained high throughout the study. The data collection system and secure web-server were reliable. The telemonitoring group complied better with collecting prescriptions for their cardiac drugs. Video consulting started with enthusiasm, but became less useful. There were no significant differences in the quality of life (GHQ) and Chronic Heart Failure (Guyatt) questionnaire scores between the telemonitored group and the controls. Conclusions: Home telemonitoring is an acceptable reliable intervention. Baseline rates for compliance with self-monitoring are set out in this study. Benefit in terms of compliance with medication and self-monitoring is still seen after 1 year. Video consulting over ordinary telephone lines did not show sustained benefit, and was not complied with.

**Continuous automated telecare assessment of the elderly [1997]**

**Authors:** Doughty, K., and Costa, J.

**In:** Journal of Telemedicine and Telecare 3(Suppl 1): S1:23-5.

**Abstract:** An automated scheme is proposed to assess the ability of elderly people to live alone in the community. It employs an Enhanced Activities of Daily Living index based on a computerized questionnaire form. In addition, a number of low-cost sensors have been developed which provide electronic measures of

certain activities; these can provide additional inputs to the assessment form using telemetry. The sensors are capable of measuring a wide range of functional performance, thus providing the means of continuously and objectively assessing a patient's condition following hospitalization.

### **Home tele-nursing in Kansas: Patients' perceptions of uses and benefits [1997]**

**Authors:** Whitten, P., Mair, F., and Collins, B.

**In:** Journal of Telemedicine and Telecare 3(Suppl 1): S1:67-9.

**Abstract:** Elderly individuals involved in a home telenursing project were studied. The project nurses provided home health services from 'telenursing cockpits' located in three separate sites in Kansas. A cable television-based interactive video system was used to transmit video pictures at 30 frames/s, with 288 horizontal lines of resolution. During phase 1 of the study, interview data were collected from 22 subjects (4 men, 18 women). During phase 2, the original participants were contacted but only 9 (1 man, 8 women) were still receiving home health services. Contrary to expectations, the technology was not an important issue for the participants. They did not express any particular worry or excitement about it. Nor did they describe difficulties in adapting to its use. Use of telemedicine technology did not appear to have any negative effects on communication. The results suggest that further thought needs to be given to defining clearly the purpose and goals of telemedicine projects.

### **Effectiveness of home based support for older people: systematic review and meta-analysis**

**Authors:** Elkan R, Kendrick D, Dewey M, Hewitt M, Robinson J, Blair M et al.

**In:** BMJ 2001; 323(7315):719-725.

**Abstract:** **OBJECTIVE:** To evaluate the effectiveness of home visiting programmes that offer health promotion and preventive care to older people. **DESIGN:** Systematic review and meta-analysis of 15 studies of home visiting. **PARTICIPANTS:** older people living at home, including frail older people at risk of adverse outcomes. **OUTCOME MEASURES:** Mortality, admission to hospital, admission to institutional care, functional status, health status. **RESULTS:** Home visiting was associated with a significant reduction in mortality. The pooled odds ratio for eight studies that assessed mortality in members of the general elderly population was 0.76 (95% confidence interval 0.64 to 0.89). Five studies of home visiting to frail older people who were at risk of adverse outcomes also showed a significant reduction in mortality (0.72; 0.54 to 0.97). Home visiting was



associated with a significant reduction in admissions to long term institutional care in members of the general elderly population (0.65; 0.46 to 0.91). For three studies of home visiting to frail, "at risk" older people, the pooled odds ratio was 0.55 (0.35 to 0.88). Meta-analysis of six studies of home visiting to members of the general elderly population showed no significant reduction in admissions to hospital (odds ratio 0.95; 0.80 to 1.09). Three studies showed no significant effect on health (standardised effect size 0.06; -0.07 to 0.18). Four studies showed no effect on activities of daily living (0.05; -0.07 to 0.17). **CONCLUSION:** Home visits to older people can reduce mortality and admission to long term institutional care.

### **Impact of Automated Calls With Nurse Follow-up on Diabetes Treatment Outcomes in a Department of Veterans Affairs Health Care System: A Randomized Controlled Trial**

**Authors:** Piette J, Weinberger M, Kraemer F, McPhee S.  
**In:** Diabetes Care 2001; 24(2):202-208.

**Abstract:** **OBJECTIVE:** We evaluated automated telephone disease management (ATDM) with telephone nurse follow-up as a strategy for improving diabetes treatment processes and outcomes in Department of Veterans Affairs (VA) clinics. We also compared the results with those of a prior ATDM trial conducted in a county health care system. **RESEARCH DESIGN AND METHODS:** A total of 272 VA patients with diabetes using hypoglycemic medications were randomized. During the 1-year study period, intervention patients received biweekly ATDM health assessment and self-care education calls, and a nurse educator followed up with patients based on their ATDM assessment reports. Telephone surveys were used to measure patients' self-care, symptoms and satisfaction with care. Outpatient service use was evaluated using electronic databases and self-reports, and glycemic control was measured by HbA1c and serum glucose testing. **RESULTS:** At 12 months, intervention patients reported more frequent glucose self-monitoring and foot inspections than patients receiving usual care and were more likely to be seen in podiatry and diabetes specialty clinics. Intervention patients also were more likely than control patients to have had a cholesterol test. Among patients with baseline HbA1c levels  $\geq 8\%$ , mean end-point values were lower among intervention patients than control patients (8.7 vs. 9.2%, respectively;  $P=0.04$ ). Among intervention and control patients with baseline values  $\geq 9\%$ , mean end-point values were 9.1 and 10.2%, respectively ( $P=0.04$ ). At follow-up, intervention patients reported fewer symptoms of poor glycemic control than control patients and greater satisfaction with their health care. **CONCLUSIONS:** This intervention improved the quality of VA diabetes care. Intervention effects for most end points replicated findings from the prior county clinical trial, although intervention-control differences in the

current study were smaller because of the relatively good self-care and health status among the current study's enrollees.

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## **COST**

### **The cardiac connection program: home care that doesn't miss a beat [2003]**

**Authors:** Chetney, R.

**In:** Home Healthcare Nurse Oct 21(10): 680-6.

**Abstract:** SUMMARY: The Cardiac Connection program at Sentara Home Care Services uses two-way video home telehealth to provide comprehensive home care to patients with congestive heart failure. Program results showed an 82% decrease in hospital admissions and a 77% decrease in emergency room visits. In addition, patients felt less depressed, were eating and sleeping better, and felt like less of a burden to their family than before the telehealth visits began.

### **Integrating home telehealth into the care of wound care patients: justifying the business model [abstract] [2003]**

**Authors:** Chetney, R., Slater, S., and Sauls, E.

**In:** Telemedicine Journal and e-Health 9(Suppl 1): S65.

**Abstract:** Wound care under the home health prospective payment system (PPS) has become one of the largest challenges for agencies today. Out of the total Medicare admissions to home care, 37% have a diagnosis involving some type of wound with an average length of stay of 75 days. These patients utilize a large percentage of resources, often including twice a day nursing visits and costly supplies. Managed care also experiences the high costs of these patients. Sentara Home Care has integrated an interactive Home Telehealth model utilizing WOCNs to decrease the wound patient's length of time till healing. The WOCN conducts a wound assessment using interactive video and high-resolution digital photography early in the episode of care. The WOCN assesses the wound, evaluates the effectiveness of the current wound care treatment, makes treatment recommendations to the physician, and educates staff. By using interactive video, the WOCN productivity increases dramatically. In addition, the in-home nurse can connect with the WOCN for added support. Pictures are captured and stored for later retrieval and tracking of wound healing rates. This panel discussion will describe Sentara's Home Telehealth wound project, the technology used, along with outcomes and lessons learned. Panelists: Rhonda Chetney, RN, MS, Sentara Health Services, Chesapeake, VA

(Panel Chair) Sue Slater, RN, BSN, American TeleCare, Inc., Eden Prairie, MN  
Eva Sauls, RN, WOCN Sentara Home Health Services, Chesapeake, VA 75  
minutes of presentation Topics for panelists: 25 minutes each (R. Chetney)  
Justifying the Business Model (S. Slater) Wound Care Solution (E. Sauls)  
Positive Outcomes 15 minutes of question and answer Caring for wound care  
patients is the most costly and challenging patient care issue that Home Health  
Agencies face. Agencies are struggling to develop business plans and institute  
changes in their model of care for wound care patients. Goals include decreasing  
in-home visits while empowering patients and lowering total health care costs.  
Rhonda will describe the process for justifying the business model for wound  
care using Home Telehealth and Wound Ostomy and Continence Nurses  
(WOCN). Rhonda will examine ways to determine Home Telehealth costs and  
calculate a return on investment. The clinical model of care and the clinical  
outcome evaluation will also be presented. A strong clinical program depends on  
a sound financial foundation. (Abstract from The American Telemedicine  
Association Eighth Annual Meeting & Exposition, April 27 - 30, 2003, Orlando,  
Florida)

#### **Home telehealth reduces healthcare costs [2004]**

**Authors:** Noel, H.C., Vogel, D.C., Erdos, J.J., Cornwall, D., and Levin, F.  
**In:** Telemedicine Journal and e-Health Summer 10(2): 170-.

**Abstract:** The aim of this study was to determine whether home telehealth, when integrated with the health facility's electronic medical record system, reduces healthcare costs and improves quality-of-life outcomes relative to usual home healthcare services for elderly high resource users with complex co-morbidities. Study patients were identified through the medical center's database. Intervention patients received home telehealth units that used standard phone lines to communicate with the hospital. FDA-approved peripheral devices monitored vital signs and valid questionnaires were used to evaluate quality-of-life outcomes. Out-of-range data triggered electronic alerts to nurse case managers. (No live video or audio was incorporated in either direction.) Templated progress notes facilitated seamless data entry into the patient's electronic medical record. Participants (n = 104) with complex heart failure, chronic lung disease, and/or diabetes mellitus were randomly assigned to an intervention or control group for 6–12 months. Parametric and nonparametric analyses were performed to compare outcomes for (1) subjective and objective quality-of-life measures, (2) health resource use, and (3) costs. In contrast to the control group, scores for home telehealth subjects showed a statistically significant decrease at 6 months for bed-days-of-care ( $p < 0.0001$ ), urgent clinic/emergency room visits ( $p = 0.023$ ), and A1C levels ( $p < 0.0001$ ); at 12 months for cognitive status ( $p < 0.028$ ); and at 3 months for patient satisfaction ( $p < 0.001$ ). Functional levels and patient-rated health status did not show a

significant difference for either group. Integrating home telehealth with the healthcare institution's electronic database significantly reduces resource use and improves cognitive status, treatment compliance, and stability of chronic disease for homebound elderly with common complex co-morbidities.

**Interactive home telehealth: moving from cost savings to reimbursement [2002]**

**Authors:** Chetney, R.

**In:** Telemedicine Today Oct/Nov 9(3): 19-20.

**Abstract:** Creative, proactive strategies help agencies turn telehealth into a revenue generator. The author, at Sentara Home Care Services in Virginia, discusses ways to sell the service, as well as hospital networking.

**Cost analysis of telehomecare [2001]**

**Authors:** Dansky, K.H., Palmer, L., Shea, D., and Bowles, K.H.

**In:** Telemedicine Journal and e-Health Fall 7(3): 225-32.

**Abstract:** The demand for home health care has skyrocketed in recent years. The aging population and the push for more efficient delivery of hospital services have fueled this growing demand. However, health care financing reforms have constrained the industry's growth. Home health agencies struggle to deliver high-quality services while staying within the financial limitations imposed by reimbursement changes. Telehomecare is one way to provide cost-effective care in the current environment. Personal computers and video equipment can transmit data over ordinary telephone lines and allow home health providers to monitor patients and provide care at a much lower cost than earlier technologies that required wider bandwidth telephone lines and more complex equipment. But can telehomecare yield cost-savings for home health agencies? This article addresses the costs associated with a telehomecare intervention in a large, urban, home health agency. The purpose of the study was two-fold: (1) to test the effects of telehomecare on clinical outcomes, and (2) to estimate the financial costs associated with providing telehomecare services. Our results show that, while telehomecare imposes additional expenses for care delivery, it contributes substantial savings without compromising quality. Additionally, we found that the financial benefit increases exponentially as the duration of the patient care episode increases.

**Systematic review of cost effectiveness studies of telemedicine interventions.**

**Authors:** Whitten PS, Mair FS, Haycox A, May CR, Williams TL, Hellmich S.  
**In:** BMJ 2002; 324(7351):1434-1437.

**Abstract:** OBJECTIVES: To systematically review cost benefit studies of telemedicine. DESIGN: Systematic review of English language, peer reviewed journal articles. DATA SOURCES: Searches of Medline, Embase, ISI citation indexes, and database of Telemedicine Information Exchange. STUDIES SELECTED: 55 of 612 identified articles that presented actual cost benefit data. MAIN OUTCOME MEASURES: Scientific quality of reports assessed by use of an established instrument for adjudicating on the quality of economic analyses. RESULTS: 557 articles without cost data categorised by topic. 55 articles with data initially categorised by cost variables employed in the study and conclusions. Only 24/55 (44%) studies met quality criteria justifying inclusion in a quality review. 20/24 (83%) restricted to simple cost comparisons. No study used cost utility analysis, the conventional means of establishing the "value for money" that a therapeutic intervention represents. Only 7/24 (29%) studies attempted to explore the level of utilisation that would be needed for telemedicine services to compare favourably with traditionally organised health care. None addressed this question in sufficient detail to adequately answer it. 15/24 (62.5%) of articles reviewed here provided no details of sensitivity analysis, a method all economic analyses should incorporate. CONCLUSION: There is no good evidence that telemedicine is a cost effective means of delivering health care. [References: 7]

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**INTERGRATION (INTO PRACTICE)**

**Telecaring: home care nursing praxis and the discipline of nursing [2003]**

**Authors:** Rice, R.A.

**Publisher:** University of Colorado Health Sciences Center, Denver, CO, Pages: 143p

**Abstract:** Economic policies drive trends in home care including a reduction in the number of home visits and market growth in alternative forms of cost-effective care such as telehealth services including the telephone. Capitation in home care and cost containment drive nurses to use the telephone with the intention to care for the patient. Little research exists in the literature on the extent to which telephone nursing impacts on home care nursing praxis. Without careful consideration as how best to use telecare the technology may define the profession. The purpose of this study was to explore and describe caring praxis in home care within the context of telecaring communication. This qualitative

single case study examined fundamentals of home care nursing praxis when providing telecaring services. The sample was 50 audio taped telephone calls between patients/caregivers and the on-call home care nurse working in a Medicare certified palliative care and hospice agency. Discourse analysis was used as methodology. Patterns of communication in this study indicated that calls were triaged by the on-call home care nurse to determine patient needs and solutions. The majority of calls were for a physical need. Solutions included clinical recommendations, counseling, or referral and sometimes a physical visit. The matching of vocal tone, a phenomenon referred to as "toning", between the patient/caregiver and on-call home care nurse was an indicator that needs were met. Along with intuition and instinct, toning may also represent a telecare nursing intervention that transcends traditional nursing skills such as touch and direct observation and prompt changes in nursing practice as the nurse and patient/caregiver experience each other as a virtual presence. Three types of telecaring emerged in this study. "Physical" care centered on medical problems. "Humanistic" care reflected interpersonal communication skills by the on-call home care nurse. "Transpersonal" care such as prayer and sending out positive thoughts reflected multidimensional caring beyond traditional concepts of time and space. The data indicated that trust was a primary factor in the nurse/patient/caregiver relationship with each functioning as partners in care. From legal/ethical perspectives this study suggested that telephone triage services would be bolstered with written guidelines. (PhD Thesis)

### **Telehealth in home care practice. [1998]**

**Authors:** Warner, I.

**In:** Journal of Nursing Administration Jun 28(6): 3, 16 .

### **An experience in telenursing [1999]**

**Authors:** Borchers, L., and Kee, C.C.

**In:** Clinical Nurse Specialist May 13(3): 115-8.

**Abstract:** The purpose of this article is to describe how a telemedicine system was used to complete a family and home assessment and to discuss issues facing advanced practice nurses (APNs) when they use such systems in practice. Incorporating discharge care into advanced practice is an increasingly important component of the nursing care given during acute illness. Telemedicine systems offer a mechanism for assessing the ways in which home situations impact on patient recovery. Telemedicine provides a method for early intervention that can ameliorate or prevent developing problems relatively

inexpensively. The advantages and disadvantages of one such system, the Picasso, are described.

**Nurse and patient reactions to a developmental home telecare system. [1998]**

**Authors:** Whitten, P., Collins, B., and Mair, F.

**In:** Journal of Telemedicine and Telecare 4(3): 152-60.

**Abstract:** Pilot studies have suggested that telemedicine is a satisfactory means of delivering nursing services into the home. A home telecare program in Kansas provided nursing services to homes in four towns in Kansas. The present study examined patients' and nurses' perceptions of a variety of issues related to home telecare. Data-collection methods included in-depth interviews, observation and analyses of archival data from patient records. Patients suffered an average of 4.6 concurrent illnesses. On the whole, patients perceived the system as a valuable resource that offered great potential, although many saw no immediate health benefits for themselves. Nurses were enthusiastic about the prospect of practicing in this way, although they did have strong opinions about what types of nurses, patients and illnesses were suited to telemedicine.

**Patients' perceptions regarding home telecare [2000]**

**Authors:** Agrell, H., Dahlberg, S., and Jerant, A.F.

**In:** Telemedicine Journal and e-Health Winter 6(4): 409-15.

**Abstract:** While home telecare's potential to reduce health costs appears clear, patients' perceptions regarding home telecare. We developed a 34-item survey instrument, which was administered during structured home interviews to a convenience sample of patients who were currently or had previously been enrolled in the Sonora Health System or University of California Davis home telecare pilot projects. Fifteen (56%) of the 27 past or present enrollees agreed to be interviewed. Most had either a neutral (9 of 15, 60%) or positive (5 of 15, 33%) outlook regarding home telecare before their enrollment. Following enrollment, all were either very satisfied (10 of 15, 67%) or somewhat satisfied (5 of 15, 33%) with services they had received. Fourteen of 15 (93%) were willing to receive home telecare services in the future, and all 15 would recommend home telecare to friends or family members. Despite education to the contrary, patients perceived that the presence of telecare equipment in the home implied 24-hour-a-day access to a nurse. Some interviewees felt uncomfortable disclosing intimate information during the televisits, and others lamented the reduced amount of time the nurses spent "socializing" as compared to in-person visits.

Despite concerns regarding its confidentiality and its ability to approximate the social stimulation of in-person nursing visits, patients in these pilot trials seemed satisfied with home telecare and appeared ready to accept its widespread use.

### **Work stress and job satisfaction in hospital-based home care**

**Authors:** Beck-Friis B, Strang P, Sjoden PO.

**In:** J Palliat Care 1991; 7(3):15-21.

**Abstract:** The entire staff of the hospital-based home care (HBHC) at Motala (n = 35) participated in a study concerning work stress and job satisfaction. A significant number of the patients in the HBHC have advanced malignancies and most of them are terminally ill. A total of 219 questions about stress and job satisfaction were asked in a self-administered questionnaire. Only 3%-17% of the staff often or very often experienced stress factors such as high expectations, confusing orders, or lack of information. Instead, a majority stated that they often/very often experienced different aspects of job satisfaction, such as meaningfulness, security, and stimulation. Staff members stating that they often were proud/very proud of their jobs, members feeling that their skill and experience were needed, as well as staff members who often received praise from their superiors, were less prone to look for other jobs (p less than 0.01, p less than 0.05, and p less than 0.05, respectively). Those who often/very often were allowed to take initiatives of their own more often regarded their jobs as non-monotonous (p less than 0.05) and stimulating to their personal development (p less than 0.001). Despite demanding jobs with severely ill patients, most of the staff gave high ratings for different aspects of job satisfaction. This positive spirit was also reflected in the exceptionally low job turnover among them. Possible explanations may be a careful selection of personnel and an organization which both stimulates the staff's own initiatives and provides support when necessary

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### **INTERGRATION (INTO ORGANIZATIONAL SERVICES)**

#### **Predicting success: stakeholder readiness for home telecare diabetic support [2002]**

**Authors:** Hebert, M.A., Paquin, M.J., and Iversen, S.

**In:** Journal of Telemedicine and Telecare 8(Suppl 3): S3:33-6.

**Abstract:** Readiness to adopt a new technology is one factor that contributes to the success of a telehealth programme. Since one goal of telehealth is to improve care, it is appropriate to determine its success through a quality-of-care



framework that addresses structure, process and outcome. A qualitative case study of home care in the Calgary Health Region in Alberta set out to understand how clients, nurses, physicians and managers perceived their readiness to use video-visits for home care. Focus groups, home visits, and telephone and face-to-face interviews were used to collect data. Readiness to adopt home telecare was compared between groups, as well as with behaviour predicted in the literature. Differences in perceptions were identified among the four participant groups. Clients and managers identified a higher degree of readiness - clients because of the potential to support independence in their homes and managers because of the potential efficiencies in the system. (Proceedings from Successes and Failures in Telehealth 2 held in Brisbane, Queensland, Australia, August 1-2, 2002).

### **Developing a patient classification for home telehealth populations [abstract] [2003]**

**Authors:** Sessions, G.R., Brandes, W., Davies, S., Rodbard, D., and Poropatich, R.K.

**In:** Telemedicine Journal and e-Health 9(Suppl 1): S65.

**Abstract:** In the broadest sense, classifying patients so that both physical and fiscal resources can be appropriately allocated has proven itself to be a reliable method for delivering safe, quality care to patients. Many hospitals and agencies across the world have re-examined patient care delivery systems and the roles of health professionals in those systems to provide cost effective care. Traditionally patient classification systems have been created to determine nursing staffing patterns. In the literature review no classification system of any kind exists for home telehealth populations. The Rural Home Care Project staff developed a patient classification system specifically designed for telehealth patient populations. A 120-day study observation period identifying problematic areas with the tool was completed. The tool has five levels based upon frequency, type of patient interaction, and also delineates between types of home telehealth. All chronic medical projects within the VISN 8 Community Care Coordination Service have also participated in an additional 120-day study observation period to continue refinement of the tool. Interrater reliability for the tool is 95-100%. The tool has been used to classify over 700 home telehealth patients. This system can serve as a model to determine best practice panel sizes for those health professionals managing chronic disease populations through home telehealth technology. (Abstract from The American Telemedicine Association Eighth Annual Meeting & Exposition, April 27 - 30, 2003, Orlando, Florida)

### **Telehealth and home health risk management [2003]**

**Authors:** Hogue, E.E.

**In:** Hospital Home Health Jul 20(7): 80-1.

**Abstract:** As providers examine exciting new possibilities in telehealth, they must remain cognizant of possible risks associated with the use of these devices. They must also take practical steps to avoid potential liabilities associated with the advent of telehomecare. There are two potential types of liability that providers must avoid in the use of telehealth: liability for negligence and liability for abandonment.

### **Home telecare [Review] [1999]**

**Authors:** Ruggiero, C., Sacile, R., and Giacomini, M.

**In:** Journal of Telemedicine and Telecare 5(1): 11-7.

**Abstract:** Technology can be used to help the care of people at home in many ways and home health care is one of the fastest growing areas of health-care provision. Home-based technology has two main facets: passive monitoring and active measurement. Technical solutions must be acceptable to both the health-care staff and the assisted person, and should supplement not replace human carers. Other important aspects of technical solutions are: simplicity of operation and management, availability, reliability and affordability. The introduction of a home telecare system always requires changes in organization, since it is not enough simply to transmit data. The data must be received and interpreted, and advice for care must be provided. The most important aspects of home telecare are: organization and training, improving the quality of life; economy and technology.

### **Patient satisfaction with a home televisiting service based on interactive television over a cable network [2000]**

**Authors:** Valero, M.A., Arredondo, M.T., Del Noyal, F., Rodriguez, J.M., and Frias, E.

**In:** Journal of Telemedicine and Telecare 6(Suppl 1): S1:99-101.

**Abstract:** Experience shows that high-quality audiovisual contact between remote health carers and patients facilitates a telemedicine service. However, the lack of broadband communication to the home usually prevents domestic televisiting. Deployment of cable networks in Spain has allowed the implementation of a home televisiting service designed for patients with chronic diseases. In a trial, 15 patients received televisits by three specialists and three

nurses from the Severo Ochoa Hospital in Madrid. Five patients suffered from chronic pain, five were from the nephrology unit and five had been treated at the intensive-care unit after acute myocardial infarction. Each patient participated in three televisiting sessions, two provided by a specialist and the other by a nurse. The average length of a televisit was 12 min range (5-21 min). The patients expressed their satisfaction with the service. (Proceedings of TeleMed 99: From Research to Service Delivery. Seventh International Conference on Telemedicine and Telecare, London, 28 Nov - Dec 1, 1999).

### **The effectiveness of videophones in home healthcare for the elderly. [1999]**

**Authors:** Nakamura, K., Takano, T., and Akao, C.

**In:** Medical Care Feb 37(2): 117-25.

**Abstract:** OBJECTIVES: This study evaluates the effectiveness of telecare, the use of videophones in healthcare for the elderly in communities, and proposes an effective application of telecare in home healthcare. METHODS: An intervention study design was applied to evaluate the add-on benefits to home healthcare from a videophone system using Integrated Services Digital Network (ISDN) installed in individual homes of clients and service providers. An intervention group of home healthcare cases were provided with videophones (VHHC group), and it was compared to a reference group of regular healthcare cases (HHC group). Persons from the 2 groups were individually matched according to sex, age, and their independence in activities of daily living. The functional independence of the individuals in the 2 groups was assessed before and 3 months after home healthcare was started, with and without videophones. The effectiveness of videophones was assessed by analyzing the improvements in functional independence using a paired t test. RESULTS: Improvements in functional independence of 5 pairs of males and 11 pairs of females were analyzed. Improvements in ADL, communication, and social cognition independence of the VHHC group over the 3-month trial period measured by the Functional Independence Measure were 1.5 points, 0.7 points, and 1.9 points, respectively; statistically, these were significantly greater than those of the HHC group (individually  $P < 0.05$ ). CONCLUSIONS: The effectiveness of the videophones in home healthcare service was found to be significant. This evidence supports the use of videophones in home healthcare to improve the quality of service.

### **The potential of telemedicine for home nursing in Queensland [2001]**

**Authors:** Black, S., Andersen, K., Loane, M.A., and Wootton, R.

**In:** Journal of Telemedicine and Telecare 7(4): 199-205.

**Abstract:** The potential for telemedicine in home nursing was examined by retrospectively reviewing the case-notes relating to home visits made by nurses in Queensland. The case-notes of 166 clients were randomly selected from 10 domiciliary nursing centers run by the Blue Care nursing organization in south-east Queensland. Two experienced community registered nurses independently undertook a retrospective review of the case-notes. Each reviewer made an independent judgment as to whether any of the home nursing visits in the episode of care could have been conducted by telemedicine. Visits requiring hands-on care were deemed to be unsuitable for telemedicine. A total of 12,630 home visits were reviewed. The median number of visits per client was 27 (range 1-722). The mean age of the clients was 72 years (range 2-93 years). A total of 1521 home visits (12%) were judged suitable for telemedicine. There was no significant difference in suitability between males (13%) and females (12%). Care interventions suitable for telemedicine were more likely to be those of a supportive, educational or review nature. Forty per cent of clients lived up to 5 km from the home nursing center, 33% lived 5-10 km from the center and 27% lived over 10 km from the center. The results of the present study confirm the potential for telemedicine in home nursing in Australia.

### **Infusion Tele-Therapy in the Home: An Alternative Mode of Service Delivery.**

**Author:** Kinsella A. 10-19-2001.

**Ref Type:** Data File

**Abstract:** One advantage of home infusion, especially therapies delivered by telecommunications-ready pumps, is to enable at-home patients to experience greater freedom and comfort than they would have traveling to ambulatory infusion centers or other outpatient clinics. This article covers the development of the home infusion industry, and indicates challenges in changing payor policy decisions and in provider acceptance of new technologies. Home infusion therapies that are delivered via remotely programmable ambulatory pumps (by "tele-infusion") are part of today's emerging trend in home care toward using substituted means of care. This drive toward locating alternate care means is being fueled by factors such as: earlier discharge of patients from institutions who may require extensive care services, often including multiple infusion therapies; limited budgets of home care agencies for providing more types of care to more needy at-home patients; and a home care industry initiative that is encouraging patient self management, when possible.

### **Measuring Costs and Quality of telecomecare**

**Authors:** Britton B, Engelke M, Rains D, and Mahmud K.

**In:** Home Health Care Management and Practice 2000; 12(4):27-32.

**Abstract:** Home care agencies must explore alternative methods of care delivery if they are to remain competitive in the health care market of the future. The use of TeleHomecare can help agencies maintain a high level of quality while reducing costs. Since this is a relatively new modality of care delivery, there is a need to monitor and document outcomes. Physicians, managed care companies, and public policy makers will require reliable and valid data before they can become advocates of TeleHomecare. This article describes how one TeleHomecare program has developed an outcome-oriented database and how these data are used in marketing the program.

### **A success model: Marquette General Health System [2003]**

**Authors:** Whitten, P., Adams, I., and Davis, S.

**In:** Telemedicine Journal and e-Health Spring 9(1): 41-8.

**Abstract:** The Marquette General Health System (MGHS) initiated its telehealth program in 1995 with eight network sites in Michigan's Upper Peninsula. There are currently almost 30 active sites in this network that provide clinical, educational, and administrative services. In this article, MGHS is assessed against four criteria, namely, integration, evaluation, expansion, and acceptance. Several assessment data collection strategies were employed among patients, providers, administrators, and rural community members. This paper delineates the extent to which the MGHS program meets the definition of success as defined by this four-level model. Data and anecdotal evidence are presented that illustrate that the MGHS program has been successful in its attempt to increase access to medical services for the rural population of the Michigan Upper Peninsula, as well as facilitate medical and health education, and home care services.

### **Home telehealth clinical guidelines [2003]**

**Authors:** Britton, B.P.

**In:** Remington Report Mar/Apr 11(2): 52-5.

**Abstract:** TeleHomeCare technology was first installed in patient homes in 1996. Home Health Agencies utilized the technology to conduct "live" audio/video

virtual visits to chronically ill home health care patients in the privacy of their homes.

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## **POLICY**

### **The role of Telematics in assisting family carers and frail older people at home.**

**Authors:** Hanson E, Clarke A.

**In:** Health and Social Care in the Community 2000; 8(2):129-137.

**Abstract:** The overall aim of the ACTION research project (Assisting Carers using Telematic Interventions to meet Older person's Needs) is to maintain or enhance the autonomy, independence and quality of life of frail older and disabled people and their family carers by providing information, advice and support in the home. The authors report on the first phase of evaluation conducted using a case-study approach to test the ACTION system in several family carers' homes in Sheffield, England. The results reflect the realities of conducting an applied research technology project and are discussed with reference to the government's recent national strategy for carers. The authors acknowledge the need for further evaluation studies to explore the key issues raised within this preliminary evaluation phase.