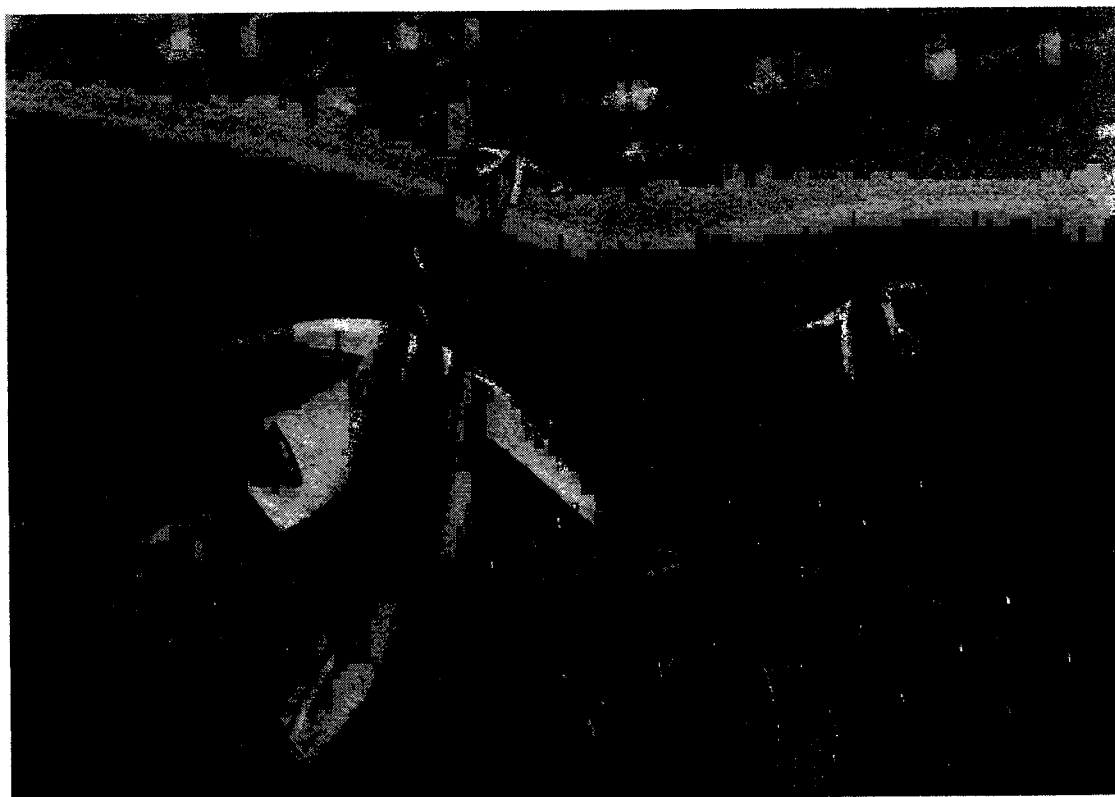


# Chronic Disease Management: Breakthrough Opportunities for Improving the Health and Productivity of Iowans

A Report of the Iowa TeleCare Consortium  
to the  
Iowa General Assembly

January 15, 2003



DES MOINES  UNIVERSITY

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### **Background for Report**

HF 732 enacted by the Seventy-Ninth General Assembly and signed by the Governor, provided for an appropriation of \$150,000 to be used as state matching funds, in combination with federal and private funds, to the Iowa TeleCare Consortium. The Consortium, a collaboration of public, private, academic and governmental participants coordinated by Des Moines University, would develop a telecare pilot project to manage the chronic diseases for sub-populations of Iowans with diagnose including but not limited to chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), diabetes and asthma. The legislation also stipulated that a report on the status of the program be provided to the General Assembly by January 15, 2003.

The following report outlines progress by the Iowa TeleCare Consortium in its careful planning of a chronic disease management demonstration project. The partners involved in the Consortium, the numbers of which have expanded during the past year, have advanced the preparation for a broad based project to be conducted with individuals throughout the State. This planning has been made possible through private funding by selected partners, private foundation support and a planning grant from the Iowa Department of Economic Development. Key elements of that planning are reported below.

It is significant to note that the Federal government has yet to pass its budget for the current fiscal year. The present plans of the Consortium to deploy a comprehensive proactive chronic disease management demonstration project are reliant upon Federal support, which will likely be determined within a few short weeks. The Consortium remains optimistic that such support will be forthcoming in view of the importance of the project to Iowans as well as the support both private and public that has been shown for the proposed plans.

None of the \$150,000 appropriated by the General Assembly in the above law has been made available to the TeleCare Consortium or to support the work that is reported below.

### **Executive Summary**

Chronic disease management is an organized intervention program devoted to the care of individuals possessing a chronic disease. Frequently, the most common chronic diseases such as

diabetes, congestive heart failure (CHF), asthma and chronic obstructive pulmonary disease (COPD) are the focus of such programs. Such chronic diseases contribute to the finding that 5 percent of the nation's population consumes 50 percent of its healthcare services (Future Health, 1999).

The goal of chronic disease management is to achieve one or more measurable outcomes such as cost containment, patient functionality, clinical effectiveness or patient satisfaction. Growing evidence, based upon extensive review of literature and implemented programs, supports the efficacy of chronic disease management when smartly conceived and properly executed. Positive experiences of providers, health plans, employers and individuals employing principles of chronic disease management in Iowa underscore the value.

Despite progress in developing effective outcome oriented disease management programs, there remain questions regarding which chronic disease programs are most effective and who should pay for the up-front investment required for planning and deployment. Such questions with unresolved answers have been a clear obstacle to implementing chronic disease management programs on a wide-scale basis in any area of the country.

Eighteen months ago, a small group of providers, employers, associations, unions, medical professionals and state agencies in Iowa began exploring how obstacles to the collaborative design and deployment of chronic disease management could be overcome. The motivation of participating organizations was unselfish and reflective of their commitment to Iowa's improved health condition.

Given the State's rural character, its prevalence rates for chronic disease, and the increasing cost of health care to all parties, the need was apparent. Considering the size of the state, its community character, the relatively close relationships among payers, providers, health plans, and the comparative manageability of the system, why should Iowa wait for a practice to develop elsewhere and be transported into the State? Would it be possible for a committed leadership group in health care to design a series of chronic disease management strategies for Iowa that would be an example for other regions to emulate? Would it be possible to do something very special for all of our citizens, especially those possessing chronic diseases?

With Iowa's special opportunity for benefit as a guide, the Iowa TeleCare Consortium was formed. The Iowa Farm Bureau, Iowa United Auto Workers, Iowa Area Development Group, Iowa Health System, Mercy Health Network, Iowa Diabetes Association, Des Moines University, Iowa Department of Elder Affairs, Iowa Department of Human Services, Iowa Department of Public Health, and other professional groups including physician leaders have participated in the work of the organization.

The initial efforts of the Consortium have been the research, planning and design for deploying effective chronic disease management strategies throughout the state. The effectiveness of many current programs have been analyzed, prevalence rates have been estimated, preliminary program delivery models have been developed, intervention strategies have been evaluated and telecommunications strategies have been assessed. A key motivation has been construction of chronic disease management strategies that take programs directly to individuals where they are

in their homes and places of business. Attention was given to creating strategies that included rather than discriminated against rural participants whose engagement may be dependant upon ambulation or transportation. Hence, telecommunications strategies have been considered as an extender to make chronic disease management programs accessible to eventual participants.

Initial funding for the work of the Consortium came from private foundations, Des Moines University, Iowa Department of Economic Development, Iowa Farm Bureau, along with technical assistance from Iowa Health System and Mercy Health Network.

The **working objective** of the Iowa TeleCare Consortium, which is soon to be named the Iowa Chronic Care Consortium, has been to design and deploy an effective statewide demonstration initiative involving 1,000+ Iowans possessing diabetes or congestive heart failure in chronic disease management programs. The plan is to deploy one or more such programs over a 3-year period in a collaborative venture with providers, employers, health plans, and government at the table throughout the process from final design to the evaluation of results. Parties would participate in the selection of the chronic disease management programs to be used and evaluate the outcomes against predetermined objectives.

The cost of the Iowa Chronic Care Demonstration initiative would be funded through a true partnership of private, state and federal resources. The **outcomes** of the demonstration project would be a comparison of the relative effectiveness of the chronic disease management strategies employed, the proportionality of benefit which could serve as a guide to future investments in subsequent programs, and a series of recommendations related to chronic disease management enabling Iowa health system participants to contain costs and improve quality.

### **Chronic Disease: Challenge to Improved Health**

Chronic disease is a challenge affecting the entire health services field. However, the profound impact occurs in the lives of individuals experiencing those chronic conditions. Most notable among these diseases are diabetes, congestive heart failure (CHF), asthma and chronic obstructive pulmonary disease (COPD). Individuals diagnosed as having such conditions, tend to be proportionately heavy consumers of emergency room visits, in-patient hospital days, prescription medications and advanced diagnostic testing. More importantly, individuals with these conditions are at higher risk than the population at large to experience loss of functionality and related depression which may eventually lead to cyclical patterns of declining health status and costly emergency interventions.

Nationwide, 70 percent of healthcare expenditures are directed toward chronic illness (HCFA, 1999). In Iowa, that percent may be even higher. The leading chronic diseases in Iowa, similar to figures nationwide, are diabetes, CHF, asthma, and COPD. The prevalence rate for diabetes nationwide is 6 percent. In Iowa it is 6.7 percent and between 1998 and 2000, Iowa experienced a 29 percent increase in prevalence (Iowa Census, 2002). Congestive heart failure is a medical condition of nearly 42,000 of the State's population (IHS, 2002). Iowa's rural character combined with aging demographics combine to influence prevalence rates of these and other chronic diseases.

Clinically, there are known behaviors and practices that can effectively mitigate unnecessary hospitalizations, surgical procedures, medications as well as some of the devastating loss of functionality experienced by individuals with chronic diseases such as diabetes and congestive heart failure. In practice, noncompliance with prescribed self-care, medications, and positive health behaviors is extremely costly to individuals as well as other components of the health care system.

Selected evidence points to a gap that exists between appropriate clinical protocols and patient practice. For example, of patients with diabetes, 54 percent did not see an ophthalmologist during the prior year; 84 percent did not receive a hemoglobin A1C test during the prior year; and 45 percent did not receive cholesterol screening during the prior year (JAMA, 1995). Only 27 percent of asthma patients received an inhaled anti-inflammatory drug to control symptoms (Meyer, 2002). Only 40 percent of heart failure patients received echocardiography tests within 3 months of initial diagnosis (Med Stat, 1999). Such examples of insufficient preventive care often result in unnecessary loss of patient functionality and avoidable costs to patients, payers, health providers and health plans. More significantly, practical programs of chronic disease management can improve the practice of effective preventative care and lead to improved health outcomes.

### **Chronic Disease Management: Building the Business Case**

Chronic disease management is not a single standardized program. Chronic disease management is an organized intervention program devoted to the care of individuals possessing a chronic disease. Frequently, the most common chronic diseases such as diabetes, congestive heart failure (CHF), asthma and chronic obstructive pulmonary disease (COPD) are the focus of such programs.

Mounting evidence which affirms the value of chronic disease management programs is being reported both in research publications and the lay press.

- A recent retrospective study of diabetes management by a Pennsylvania health plan demonstrated costs savings in the form of lower claims for program patients for both commercial and Medicare risk insurance. In addition, the study reported reduction in other measures of health care use as well as improvement in measures of quality care by patients (Diabetes Care, 2002).
- The University of Tennessee Medical Center completed a home based telemedicine program with 34 patients with CHF. Following 12 months of program participation, which included monitoring of patients in their homes by nurses in a remote location, hospitalization days for the CHF patients were only 1.26 compared with nationally published data of 6.2 days.
- John Deere Health Care provided coverage to 20,000 members with diabetes in 5 states at the time of a recent reported study. Medical costs for those members were nearly 3 times those for members who were non-diabetic. Following one year of an integrated diabetes disease management program, the overall medical costs per patient with diabetes participating in the program were reduced by 12 percent (Am J Manag Care, 2000).

- In order to stem the tide of increasing health care costs and insurance premiums, employers and health policy makers are focusing upon combinations of strategies. Key among the strategies included in that mix is chronic disease management (USA Today, 2002).

In Iowa, two examples provide valuable evidence that chronic disease management programs work. Iowa Health System has recently received national recognition for its innovative work in diabetes education. Featured objectives of the Iowa Health System Diabetes Initiative, which employs proactive nurse call contact as its primary communication, were Hemoglobin A1c level reduction, health related behavioral changes, and patient satisfaction. Specific performance targets were set prior to the program. Each of the target performance standards was met or exceeded. A1c levels have been reduced by 2 percent translating into decreased morbidity and mortality (Iowa Health System, 2002).

Mercy Health Network, with a widely dispersed array of hospitals in both rural and urban communities throughout the State, has recently completed a demonstration of telemanagement of 182 patients with congestive heart failure (CHF). This proactive disease management initiative included patients in Clinton, Dubuque, Sioux City, Mason City and Des Moines. The results of the study are notable. First, the patient participants reported highly favorable marks for the program. Substantial savings were found by the hospital. Most importantly, comparing program participant hospital admissions against projected hospital admissions for patients with CHF, 84 percent of re-admissions were avoided (Mercy Health Network, 2003).

The results of the CHF telemanagement project are worth noting. During the conduct of the chronic disease management program, the avoided admissions were estimated at 202 for the 2000-01 program period. Based upon typical reimbursement and payment models, the estimated health insurance plan gross savings were \$627,000 to \$668,000. The estimated patient savings were \$167,000 to \$209,000. The estimated hospital savings were \$152,485. The cost of disease management program was estimated at \$25,000. The estimated total net savings was between \$921,485 and \$1,004,485. Additional savings may have also been generated through avoidance of post-hospitalization follow-up office visits (von Ebers & Associates, 2003).

The above reported studies highlight that the goal of chronic disease management steps beyond cost savings alone. Other outcomes are clearly at stake. There is a paired societal expectation that costs need to be leveled or contained while quality must be ever advancing in the provision of health care. The Clinical Value Compass developed by the Hitchcock Clinic, sets the stage for measuring outcomes for chronic disease management as well as other health interventions. The idea captures a range of values through which health programs can be and are often measured. Cost containment or savings is one; however, patient functionality, clinical effectiveness and patient satisfaction may well be measures of equal weight to patients or employers. This more complete "compass" provides a stage for evaluating against the expectations of the different constituencies of health care programs.

## **Obstacles to Implementing Chronic Disease Management**

While there may be sufficient evidence that appropriate chronic disease management aids in patient satisfaction or cost containment, there are obstacles to more widespread deployment. Providers, health plans, payers and patient consumers do not have the same expectations regarding the most important outcomes to be achieved through chronic disease management. Patient satisfaction may be high on the list for one group; cost may be the priority for another. As a result, one group's chronic disease program of choice may not be the choice of all groups. Beyond chronic disease management programs being different, varying expectations exist.

This challenge of mixed expectation has often been an obstacle to widespread utilization of chronic disease management knowing that both the development and the conduct of such programs require the investment of resources. Even in instances where the desired outcome is cost containment or cost reduction, there have been concerns regarding proportional benefit to payers, patients, health plans, or providers. Health plans and government groups have been more likely to construct and utilize chronic disease management programs based solely on the benefits, particularly cost savings, that will accrue to their enterprise.

An opportunity exists to design effective programs with key health system components collaborating on the selection of programs keyed to expected outcomes. Collectively answering questions regarding which chronic disease strategies are most effective and who should pay for the up-front investment required for planning and deployment will open the door to more wide scale implementation. Collaborative demonstrations combined with evaluation against pre-determined measures hold potential for assessing who benefits and who contributes to the front-end development and operation of chronic disease management strategies.

### **Iowa TeleCare Consortium**

During the summer of 2000, a group of interested organizations and individuals began exploring the concept of creating strategy for Iowa that would result in a broad-based demonstration of chronic disease management. The basis for the early discussions centered upon the need for greater attention to individuals with chronic disease within the state. Iowa's rural demographics were an obstacle to selected individuals accessing health care despite their personal needs. The prevalence of chronic diseases in Iowa was an issue and the aging demographics held potential for heightening the need.

The Consortium was a collaboration of providers, employers, business associations, unions, medical professionals, state agencies and individual physicians. Their collective intent was to the collaborative design and deployment of chronic disease management programs which would overcome the typical obstacles to such programs. The primary goal of the Consortium emerged as a plan to research, plan, design and deploy effective chronic disease management strategies in a demonstration project involving 1,000+ Iowans with chronic disease throughout the state. A companion consideration was crafting a program that includes rather than disadvantages

participation by rural residents. Employing research on telephony based chronic disease management programs, it was envisioned that telephone and possibly video phones could be utilized as program extenders to include potential participants.

Initial funding for the Consortium initiative came from private foundations, Des Moines University, Iowa Department of Economic Development, Iowa Farm Bureau, along with technical assistance from Iowa Health System and Mercy Health Network. Deliverable products emerging from the planning work include the following features.

1. **Complete Creation of State-wide Iowa TeleCare Consortium.** Consortium development has been a continuing activity of the project. The formal organizational meeting of the Iowa TeleCare Consortium occurred in June 2002. Communication among members of the consortium has continued both formally and informally since its initiation. The group is comprised of the Leadership Committee and the Technical Committee. A roster of members of both groups is attached. The Leadership Committee is in the process of formally organizing as the Iowa Chronic Care Consortium as an independent not-for-profit entity.
2. **Design Action Research Model.** Active review of related research on proactive chronic disease management was conducted. The results of the research review led the Consortium to the decision to focus upon congestive heart failure (CHF) and diabetes as the chronic diseases to highlight in the design of subsequent models. Research was reviewed for the proven ability of proactive chronic disease management to achieve results in reducing cost, increasing medical effectiveness, improving patient functionality and increasing patient satisfaction. Chronic disease management is a proven intervention especially in CHF and diabetes. The challenge to this project was to create plans for deployment using telephony as an extender. Telephone and video phone technology along with related software has been evaluated for model applications.
3. **Deliver Technical Assistance in Policy, Funding and Education.** Models deploying proactive chronic disease management have been evaluated. These include refereed research studies as well as action programs currently employed by providers and health plans. Costs have been analyzed and benefits have been evaluated. The final report of the Consortium demonstration plan, anticipated in March 2003, will offer some assessment of such results. The methods for delivering an effective proactive chronic disease management program are less labor intensive than originally anticipated. Whether such training will be completed internal to the chronic disease management provider or externally is yet to be determined. There remain several operational models for deploying the demonstration project. A schematic depicting those options is attached.
4. **Achieve Financial Support Commitment(s).** Active work on securing funding through the Federal government and other sources has been a key objective of the project. What has been learned through the course of the project has influenced the amount of outside support required to deploy a compelling demonstration project in Iowa for CHF and diabetes. A comprehensive chronic disease management demonstration project in Iowa focusing upon 1,000+ patient participants having CHF and diabetes can effectively be



conducted over a 3 year period for substantially less than originally estimated. An earmarked Congressional appropriation has been developed and appears to have lived through two shifts of majority in the U.S. Senate. Given these shifts and the delay in finalizing the Federal budget for the current year until February 2003, it is appropriate to report that the Iowa TeleCare Consortium is anticipating and working actively to achieve an appropriate level of support. The Governor has been active in supporting the project through communications with Iowa's Federal elected officials. Example is attached. The Consortium looks forward to that support for the project. Additionally, the Iowa Farm Bureau and other organizations have committed resources to the implementation of the chronic disease management demonstration project as a match to potential Federal support.

5. **Effectively Administer and Manage the Project.** The Iowa TeleCare Consortium initiative has achieved progress in building the Consortium, evaluating the elements for deployment of a broad based demonstration project, and completing homework in its goal of achieving Federal support. This effort has been accomplished on time and on budget.

### **Working Objective**

**The working objective of the Iowa TeleCare Consortium has been to design and deploy an effective statewide demonstration initiative involving 1,000+ Iowans possessing diabetes or congestive heart failure in chronic disease management programs. The plan is to deploy one or more such programs over a 3-year period in a collaborative venture among providers, employers, health plans, and government agencies.** Representatives of these groups along with physician counsel would be at the table throughout the process from final design to the evaluation of results. These parties will participate in the selection of the chronic disease management programs to be used and evaluate the outcomes against predetermined objectives and measures.

Research conducted by Iowa Health System on behalf of the Consortium has identified ten various types of chronic disease management interventions that may be employed in the conduct of the demonstration project. A summary of those types of interventions is attached to this report. Eventually, deployed programs will likely include one or more of such interventions. The contributions of health systems, health policy planners, and other representatives of the private sector have been substantial to the development of the processes, protocols and research that has formed the basis of this initiative.

Final determination of objectives and measures will set the standard for success and create the case for more widespread application of chronic disease management. It is anticipated that cost savings in excess of disease management program costs would be a minimal standard. The targeted goals may seek returns on the program investments at a much higher level. The interest of the Consortium is to design and deploy proven strategies to achieve compelling returns on investment along with improved outcomes in clinical effectiveness, patient satisfaction and patient functionality.

The cost of the Iowa Chronic Care Consortium demonstration initiative would be funded through a true partnership of private, state and federal resources. The outcomes of the demonstration project would be a comparison of the relative effectiveness of the chronic disease management strategies employed, the proportionality of benefit, which could serve as a guide to future investments in subsequent programs, and a series of recommendations related to chronic disease management enabling Iowa health system participants to contain costs and improve quality.

**The definitive outcome measure for this health care change initiative will be the routine utilization of telecare chronic disease management (for selected diagnoses) by health plans and health care delivery systems in Iowa.** This will include HMO, PPO, self-insured, and Medicaid health plans as well as provider delivery of services. The Consortium believes that the patient cause and the business case for chronic disease management are compatible. Achieving desired outcomes of containing cost, improving patient functionality and advancing the productivity of Iowans is within the reach of this initiative.

#### **Attachments**

- Iowa TeleCare Consortium Structure
- Iowa TeleCare Consortium Leadership
- Alternative Operational Models
- Potential TeleCare Disease Management Interventions
- Clinical Value Compass

#### **Iowa TeleCare Consortium**

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**Policy Board**  
Business, Labor, Health Care,  
Education, Government  
Leadership Members

**Iowa TeleCare Consortium**

Advocates

Providers

Payers

Government

Clinical  
Services

Research

Education

Technology

# Iowa TeleCare Consortium Leadership

## Leadership Committee

Stephen Dengle, M.B.A.  
Des Moines University

Tom Evans, M.D.  
Iowa Health System

David Vellinga  
Mercy Health Network

Kevin Cunningham, M.D.  
Des Moines Internists

Craig Lang  
Iowa Farm Bureau

Dante Toreillo, D.O.  
East Des Moines Clinic

David Neil  
Iowa United Autoworkers State CAP

Rand Fisher  
Iowa Area Development Group

Representative to be Designated  
Formerly, Stephen Gleason, D.O.  
Iowa Department of Public Health

Mark Haverland  
Iowa Department of Elder Affairs

Sally Cunningham  
Iowa Department of Human Services

## Technical Committee

William Appelgate, Ph.D.  
Des Moines University

Jeff Doty  
Modis

John Strucke  
Motion Media Technology

David Garloff, Ed.D.  
Des Moines University

Bryan Larsen, Ph.D.  
Des Moines University

Sal Bognanni  
Iowa Health System

David Hickman  
Mercy Health Network

David Lyons  
Iowa Farm Bureau

Larry Murphy  
L&L Murphy Associates

Kim Majerus  
L&L Murphy Associates

Steve Morain  
Farm Bureau Financial Services

Dennis Janssen  
Iowa Department of Human Services  
Managed Care and Clinical Affairs

**Technical Support (continued)**

Stephanie Laudner  
Public Policy Government Affairs

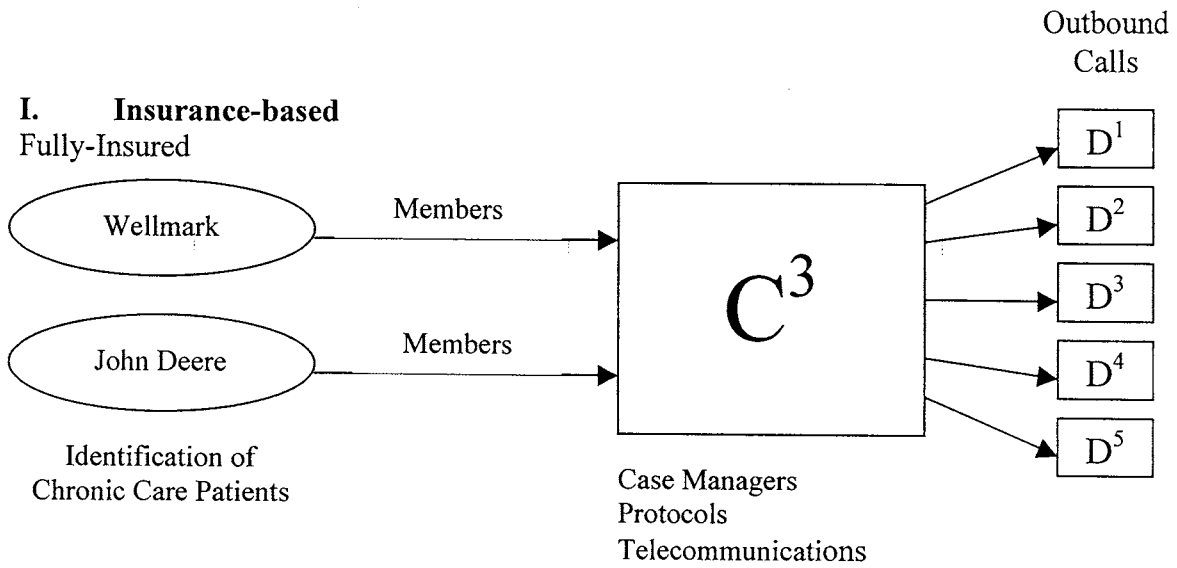
NormaJean VanDenHeavel,  
Iowa Department of Human  
Services, Data Management Services

Bruce Nuzum  
Iowa Area Development Group, L.C.

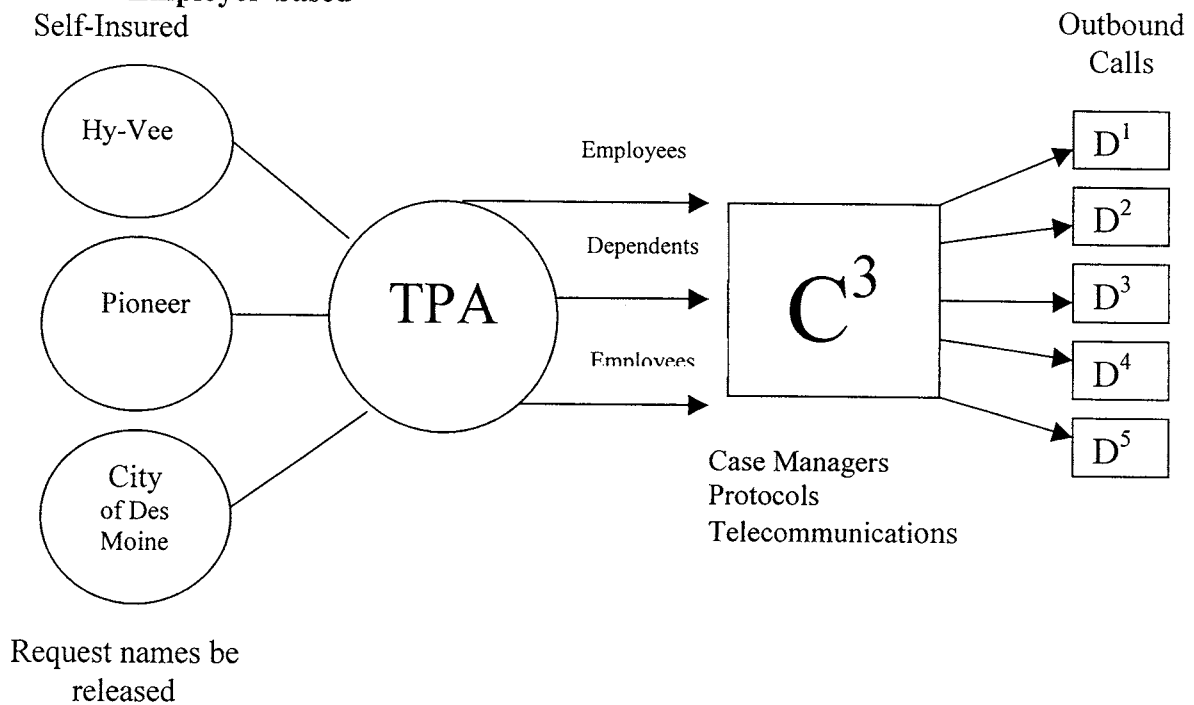
Steven Robinson  
American Diabetes Association

# Alternative Operational Models Chronic Care Consortium (C<sup>3</sup>)

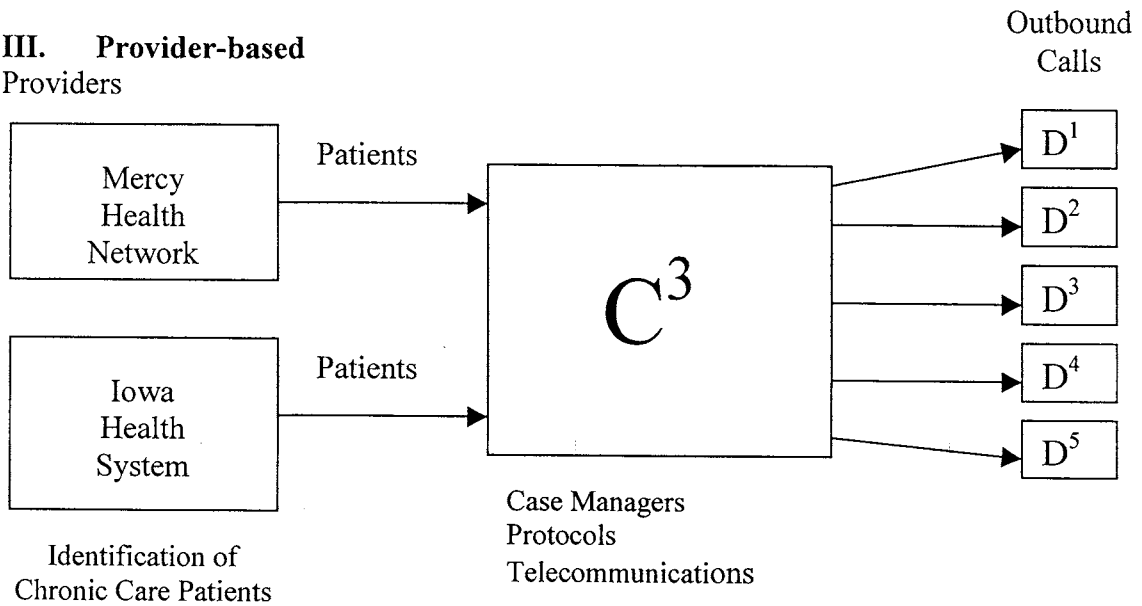
## I. Insurance-based Fully-Insured



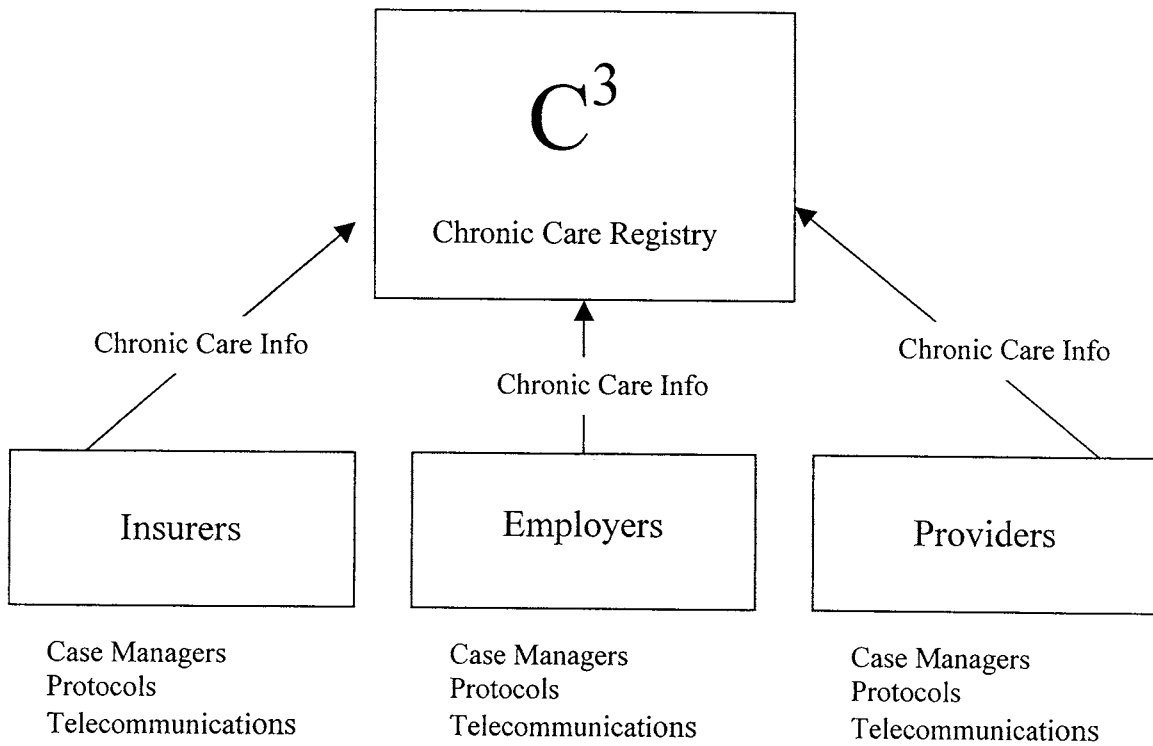
## II. Employer-based Self-Insured



### III. Provider-based Providers



### IV. Registry Model



## Potential TeleCare Disease Management Interventions

### **Participant identification:**

Potential participants for disease management program are identified through a variety of mechanisms: insurance claims screening, physician referral, case management referral, public advertisement inviting participants to self-refer.

### **Health risk assessment:**

Health status assessment is obtained for the purpose of determining participants' level of risk. Health assessment may occur via phone/Internet/mail. Rudimentary health risk assessment may be done through an analysis of claims data (diagnosis codes and billing codes). However, most programs using claims analysis assessment provide a secondary assessment to verify the accuracy of the information obtained through claims and to request information unavailable through claims, e.g. laboratory results, symptoms, self-management knowledge and skills.

### **Stratification by risk level:**

Risk levels are developed prior to program implementation. Participants are placed in a risk stratum according to information gathered through the health risk assessment process. Risk level is evidence-based and is dependent on multiple factors such as the severity of the disease of focus, co-morbidities, age, recent hospitalization, ability to self-manage one's health, and level of available community support. Each risk stratum is assigned different interventions; the highest risk stratum receives the most intensive interventions.

### **Self-management education:**

Participant education in self-management is a core intervention in all disease management programs and may be delivered via phone, Internet, mail, or through referral to a local education program.

### **Monitoring of high risk symptoms:**

Many disease management programs provide some level of health monitoring for disease progression or deterioration of health status. If such signs are evident, rapid medical intervention is recommended to avoid progression to severe morbidity, hospitalization, and/or loss of productivity. Monitoring may occur via phone, Internet, or biometric technologies that measure such indices as vital signs, laboratory readings, cardiac activity, and uterine contractions. Such devices transmit readings via phone line to a computer at which a technician or nurse interprets results and takes appropriate action.



**Referral for appropriate medical care:**

Usually provided by nurses or case managers who are monitoring participants' symptoms or biometric signs, referrals are made to appropriate clinicians, laboratories, facilities, durable medical equipment companies, etc.

**"Prompts" for self-management, tests, appointments:**

Some programs provide "prompts" to participants to remind them to self-monitor, take medications, attend medical appointments, obtain lab tests, etc. Prompts are delivered via mail, phone, Internet, or a variety of highly technological devices (buzzers, alarms, watches, beepers, videophones, etc.)

**Physician communication per participant permission:**

Some programs communicate the participant's progress to the referring physician and/or primary physician. This may be done by mail, fax, phone, or email.

**Physician practice tools:**

Some programs offer practice tools to referring physicians. Tools may include medical record flowsheets, published practice guidelines, wall charts, pocket guides, simple diagnostic tools (e.g., foot exam monofilaments), memo pads, prescription pads, etc.

**Participant Incentives:**

Incentives may be used to entice participation. Incentives may include co-pay waivers, discount off insurance premiums, pedometers, coupons / discounts for DME supplies/movies/dinners/all forms of services and products.

# Clinical Value Compass

