

# Improving Clinical Care for Chronically Ill Patient Populations Using IT Supported Care Management

Rachel E. Burdon,<sup>1</sup> Cherie P. Brunker,<sup>2,3</sup> Hanh Tran,<sup>1</sup> David A. Dorr<sup>1</sup>

<sup>1</sup>Oregon Health and Science University, Department of Medical Informatics & Clinical Epidemiology, Portland, OR; <sup>2</sup>Intermountain Healthcare, Salt Lake City, UT; <sup>3</sup>University of Utah Health Sciences Center, Division of Geriatric Medicine, Salt Lake City Utah.

Sponsored by: The John A. Hartford Foundation (grants 2001-0456 and 2006-0348) and the National Library of Medicine (grant K22 LM 8427-03)



## Context & Background

Quality of care of the chronically ill in the United States is poor and the incidence and burden of chronic disease is increasing. **Care Management Plus (CM+)** was designed, implemented, and tested at 7 primary care clinics at Intermountain Healthcare in response to the growing need for clinical care redesign in order to meet the complex needs of a chronically ill patient population. The program will be expanded to 32 additional clinical settings across the United States over the next 3 years.

**Primary need:** to create and follow complex care plans over time.

**Primary solution:** a comprehensive system to implement needed changes.

**Core principle:** The right people on the team with the right training & tools

Patients are taught to self-manage and have a guide through the system.

**Care managers** create / receive special training:

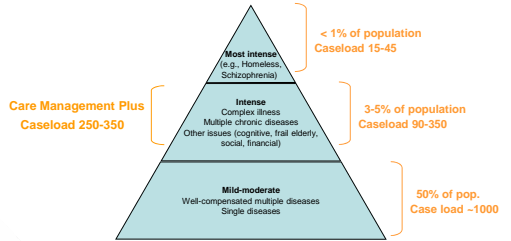
- Education, motivation/coaching
- Disease specific protocols (**all staff** included)
- Care for seniors / Caregiver support
- Connection to community resources

**Other team members** (physicians, MAs, pharmacists) participate in training, protocol development and implementation.



### People

Care management varies by intensity and function for different populations and needs.



**Care Manager quote:** *I'm an educator. I provide support to the patients and facilitate getting them to the right resources. The goal being the patient gets to the point where they're able to self manage their disease—that's the overall goal."*

**Patient quote:** *"My care manager keeps me in check."*

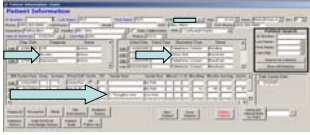
## Information Technology

### Information & Communication Technology:

#### Match workflow and needs

**Team-wide:** Patient worksheet summarizes patient information and provides printed reminders

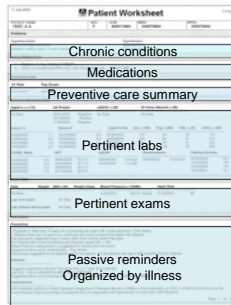
**Care manager specific:** A *Care Manager Tracking* database helps structure care plan, follow protocols, and generate reports and tickler lists.



### Information Technology Tools

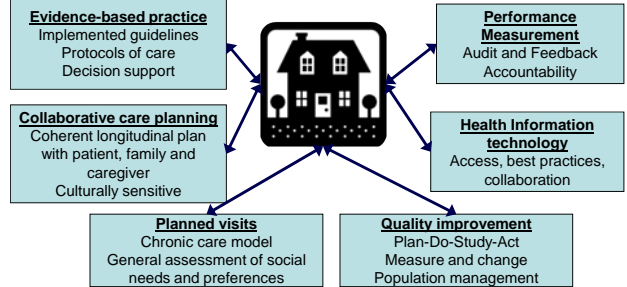
#### Patient Worksheet

- summary of chronic conditions
- pertinent test and study results
- recommendations for care
- stand alone or integrate into EHR
- Documentation of Care Manager work
- Integration of decision support tools



## Infrastructure

Care Management Plus follows a medical home model which can provide a more accurate measurement of high quality care



**Care Management Plus attempts to fill in core gaps in many clinics through a proactive, flexible system.**



## Results

In the initial testing of **Care Management Plus**, we measured patient and physician satisfaction qualitatively, and disease outcomes, physician productivity, death, and hospitalization rates quantitatively. For process measures, we looked at the services completed by the care managers and their relationship to the success of the patient.

### Patient population

In all, 4,735 patients (1,582 seniors) were seen in 2004-05, receiving 22,899 services (9,434 for seniors).

Service category	All patients	Seniors
ALL	22,899	9,434
Following evidence-based protocols	12,955 (56.6%)	4,421 (46.9%)
General education	6,808 (29.7%)	2,252 (23.9%)
Communication	6,789 (29.7%)	4,199 (44.5%)
Motivating patients	6,243 (27.3%)	2,247 (23.8%)
Social issues / barriers	8,221 (35.9%)	3,608 (38.2%)

### Initial retrospective study

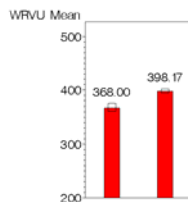
Patients matched on age, gender, comorbidities, and other key variables;

### Results

For 1026 patients with diabetes > 65 compared to 2052 controls. 50% had >1 chronic condition, with diabetes, mental health, and cardiovascular conditions most frequent.

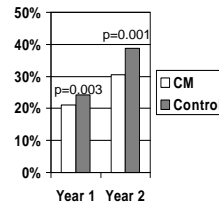
### Productivity / Satisfaction

Primary care physician productivity increased from 5-12% in a multivariable time-series model. Physicians felt care managers helped make visits with patients more efficient.

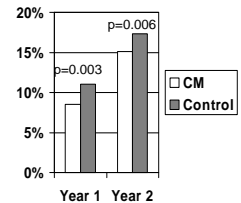


### Deaths were reduced by 15-20% ; admissions by 20%

#### Hospital Admission



#### Death



Per clinic, reductions in hospitalizations generate ~2:1 savings over the cost of the program.

## Future Steps:

**Care Management Plus** can capture many quality measures of care for the chronically ill that evaluate broader aspects of the clinical structure including education, assessment of goals and barriers, access to needed care, satisfaction, and coordination. Dissemination of **Care Management Plus** in 30 sites has occurred and the program spread continues; support is available.

For more information, see [www.caremanagementplus.org](http://www.caremanagementplus.org)