



CHRONIC CARE MODEL: Clinical Information Systems EMR Use in Chronic Disease Management

AAFP

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Principal Investigator of Care Management Plus: Dissemination of Information
Technology Tools for the Care of Seniors, www.caremanagementplus.org

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CM+



care
management
plus

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Objectives

- 1) Describe the key benefits that EMRs offer chronic disease management in terms of data handling, knowledge transmission, feedback and communication.
- 2) Explain the mechanics of using EMRs in chronic disease management.
- 3) List the problems and limitations of current EMR systems that can impede successful chronic disease management.





Key Points

- I. Realities of Disease Management
- II. Electronic Medical Records key features
crosslink to chronic care model
- III. Care Management Plus: Tools / Model for
Chronic Disease Management
- IV. Problems and limitations of current EMR
systems that can impede / promote
successful chronic disease management





P4P

Disease Management

CCM

QI

Case Management

Meaningful Use

Patient Centered

Shared Decision Making

Medical Home

Population Management

Self Management





Requirements for Effective Collaborative Care

- Team members must have ACCESS to relevant patient information
- Implement BEST PRACTICES
- And COMMUNICATE effectively





Case

Dr. Jonas is well-established in primary care practice affiliated with 3 major health plans in a suburban area.

Her patients have aged with her and the economy is worse so mix went from an initial 6% Medicare/Medicaid to 18% now.

The state QIO invites practices to participate in a demonstration project on chronic disease quality measures which will pay a bonus – first year for reporting and subsequent 2 years for performance.

She wants to participate, but isn't sure she has the tools/ measures in place that she needs or if it is worth the time.





Resources

- TransforMED
- METRIC
- Quality Improvement Organizations
- Regional Extension Centers (RECS)



Meaningful Use Incentives for Physicians

Quick Links

[HealthInsight](#)



***HealthInsight* is applying at the end of October to become a Health Information Technology Regional Extension Center for Nevada and Utah.**

We have been invited to submit a full proposal to the Office of the National Coordinator for Health Information Technology. If awarded, we will be able to provide expert technical support subsidized by federal funds to providers who are interested in adopting electronic health records (EHR) or using existing systems to achieve the meaningful use incentives offered by Medicare or Medicaid.

As a community-based non-profit organization, *HealthInsight* is:

- vendor-neutral,
- has been in our state for decades working with health professionals to improve the quality of care, and
- has already helped over 200 practices adopt and more effectively use EHRs.

If you have interest in utilizing the expert services of *HealthInsight* (in either planning for electronic health records in your practice or more effectively using your current EHR to qualify for federal incentives) we encourage you to go to our website at www.healthinsight.org/hcp/hrec/hrec.html for more information and to fill out and submit the Intent to Participate form.

www.cms.hhs.gov/Recovery/11_HealthIT.asp.



Meaningful Use Stage 1, sample of measures

- 80% of orders must use computerized physician order entry
 - 80% of unique patients must have their demographics and vital signs recorded
 - 50% of patients must receive preventative or follow-up care reminders
 - Capacity to exchange key clinical info must be performed (problems, meds, allergies, test results)
- \$44,000 over 5 yrs, \$63,750 for practices at least 30% Medicaid

www.cms.hhs.gov/Recovery/11_HealthIT.asp





Reporting What You Do and Getting Credit: Medicare Care Management Program (MCMP) Example

- 3 year demonstration program in 4 states
- 1st year paid for reporting
- 2nd and 3rd years paid for performance (\$4000/MD)



Last Name 00:23:21 Check

Demographics DM HF CAD PC

CAD Confirmation ?

CAD Confirmed: Yes

CAD1 : Antiplatelet Therapy ?

Antiplatelet Therapy: Yes

CAD2 : LDL-C Therapy ?

LDL-C Therapy: Yes

CAD3 : M.I. & Beta Blocker ?

History of MI: Yes

Beta Blocker: Yes

CAD5 * : Lipid Profile ?

Performed: Yes

CAD6 : Latest LDL-C Result ?

LDL-C Test: Yes

Date Drawn: 12/11/2008

Value: 118

CAD7 : Diabetes, LVSD & Drugs ?

Has Diabetes: Yes

Has LVSD: Yes

ACE-I/ARB: Yes

Comments (200 chars. max.)

Patient Status ?

Pt. Data: **Complete**

Warnings: No

Locked By: Unlocked

Updated: 02/10/2010 12:02 PM

Last User: admin

Topic	Dx.	Rank
DM	No	----
HF	No	----
CAD	Yes	4
PC	Yes	----
PC-1: BP		73
PC-5: Mammo		----
PC-6: Colo.		71
PC-7: Flu		71
PC-8: Pneumo		57

Database Info. ?

Perf. Year: PY2

Min. Date: 07/01/2008

Max. Date: 06/30/2009

Mode: Browsing

* Claims-based measure





00:11:32 | Save | Cancel | Check

Demographics DM HF CAD PC

DM Confirmation ?

DM Confirmed: Yes

DM1 * & DM2 : Latest HbA1c Result ?

HbA1c Test: Yes

Date Drawn: 06/10/2009

Value: 6.6

DM3 : Blood Pressure Management ?

Most Recent BP: Yes

Date Taken: 06/10/2009

Systolic: 168

Diastolic: 75

DM4 * & DM5 : Latest LDL-C Result ?

LDL-C Test: Yes

Date Drawn: 12/10/2008

Value: 122

DM6 * : Urine Protein Testing ?

Med. Attention Nephropathy: Yes

DM7 * : Eye Exam ?

Performed: Yes

DM8 : Foot Exam ?

Performed: Yes

Comments (200 chars. max.)

DM 6 patient on Lisinopril
DM8 foot exam 02/10/09

Patient Status ?

Pt. Data: Complete

Warnings: No

Locked By: Unlocked

Updated: 02/10/2010 01:25 PM

Last User: admin

Topic	Dx.	Rank
DM	Yes	5
HF	No	----
CAD	No	----
PC	Yes	----
PC-1: BP		38
PC-5: Mammo		----
PC-6: Colo.		41
PC-7: Flu		41
PC-8: Pneumo		22

Database Info. ?

Perf. Year: FY2

Min. Date: 07/01/2008

Max. Date: 06/30/2009

Mode: Browsing

* Claims-based measure

00:14:57 | Save | Cancel | Check

Demographics DM HF CAD PC

HF Confirmation ?

HF Confirmed: Yes

HF1 : LVF Assessment Result ?

LVF Result: Yes

HF2 * : LVF Testing ?

Hospitalized: Claim Not Found

LVF Performed:

HF3 : Weight Measurement | Comments

	Pre-filled	Visit Date	Weight	Invalid	Why Invalid
*					
	<input checked="" type="checkbox"/>	06/03/2009	Yes	No	
	<input checked="" type="checkbox"/>	02/25/2009	Yes	No	
	<input checked="" type="checkbox"/>	01/07/2009	Yes	No	
	<input checked="" type="checkbox"/>	12/01/2008	Yes	No	
	<input checked="" type="checkbox"/>	11/25/2008	Yes	No	

HF5 : Patient Education ?

HF Education: Yes

HF6 & HF7 : LVSD & Drugs ?

Has LVSD: No

Beta Blocker:

ACE-I/ARB:

HF8 : Atrial Fibrillation ?

Atrial Fibrillation: Yes

Warfarin: Yes

Patient Status ?

Pt. Data: Complete

Warnings: No

Locked By: Unlocked

Updated: 02/09/2010 02:11 PM

Last User: admin

Topic	Dx.	Rank
DM	No	----
HF	Yes	1
CAD	No	----
PC	Yes	----
PC-1: BP		40
PC-5: Mammo		----
PC-6: Colo.		45
PC-7: Flu		45
PC-8: Pneumo		23

Database Info. ?

Perf. Year: PY2
 Min. Date: 07/01/2008
 Max. Date: 06/30/2009
 Mode: Browsing

* Claims-based measure

Web Forms | Settings | Load Last | Form: SOAP Note | Load Data | POC: Senior Clinic at LDSH | Worksheet | Save & Print | Save & Sign | Save | Clear

Type: Progress Notes - Ge | Status: Preliminary/Signable

Level of physical Activity: [] times/week | [] Minutes/Session

Patient has Consulted with a Dietitian? When? [] [mm/yyyy]

Patient has Consulted with a Diabetes educator? When? [] [mm/yyyy]

Do you need more education on diabetes issues?

Eye Exam

Date of Exam: [] [] []

Abnormal Normal Unknown | Clear

Sno:	Have you recently had ...?	All No	Yes	No
1.	Low blood sugar reaction? (a) If so, did you need help from another person? <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2.	Sores on your feet or legs?		<input type="checkbox"/>	<input type="checkbox"/>
3.	Pain or numbness in your feet or legs? <input type="checkbox"/> Left Foot <input type="checkbox"/> Right Foot <input type="checkbox"/> Left Leg <input type="checkbox"/> Right Leg		<input type="checkbox"/>	<input type="checkbox"/>
4.	Changes in your Vision(+Changes)? <input type="checkbox"/> Visual Acuity <input type="checkbox"/> Cataracts <input type="checkbox"/> Macular Degeneration Comments: []		<input type="checkbox"/>	<input type="checkbox"/>
5.	New Sexual difficulties? (+specifics) <input type="checkbox"/> Difficulty obtaining Erections <input type="checkbox"/> Difficulty Climaxing <input type="checkbox"/> Difficulty maintaining Erections <input type="checkbox"/> Decreased Libido Comments: []		<input type="checkbox"/>	<input type="checkbox"/>
6.	Recent admission to hospital or ED? (+details) <input type="checkbox"/> Hospital Admission Diabetes Related <input type="checkbox"/> ED Visit Diabetes Related <input type="checkbox"/> Hospital Admission Not Diabetes Related <input type="checkbox"/> ED Visit Not Diabetes Related Comments: []		<input type="checkbox"/>	<input type="checkbox"/>
7.	Pain or tightness in your chest?		<input type="checkbox"/>	<input type="checkbox"/>
8.	Nausea or discomfort after eating?		<input type="checkbox"/>	<input type="checkbox"/>
9.	Difficulty with personal stress?		<input type="checkbox"/>	<input type="checkbox"/>
10.	Do you smoke? (+packs/day) Packs/day: []		<input type="checkbox"/>	<input type="checkbox"/>

- Select Patient
- Clinic Schedule
- Web Forms
- HELP/Tandem
- Demographics
- Problems
- Clinical Notes
- Allergies
- Rx
- Lab
- Micro
- Lab Order Entry
- Message Log
- ECG
- Image Acquisition
- Report Manager
- HotText
- Radiology
- Insurance
- Meds Review
- Vital Signs
- Encounters
- ESign
- 4Medica
- Height/Weight
- CAC INR
- CAC
- E-Resources
- Need Help?
- Password
- What's New?

Suggestions



Patient

- 78 year old with coronary artery disease, Class C heart failure, diabetes type 2, inflammatory bowel disease
- Clinic Perspective



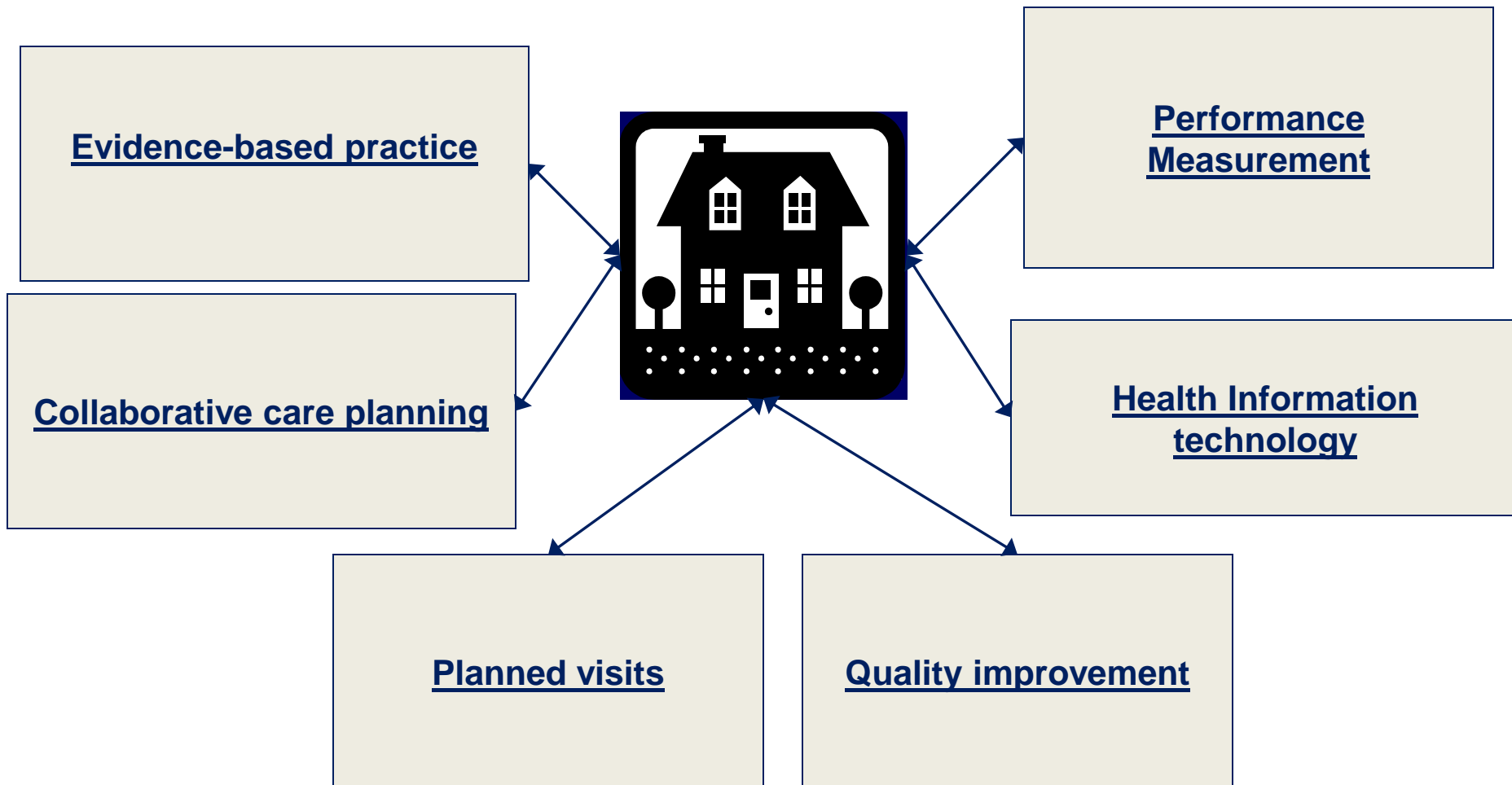


His Perspective

- Making change
- Total person
- Feedback
- Spectrum of care
- Integration of physical, mental, spiritual
- Quality of Life



Elements of Medical Home





Patient Worksheet

- Summary of patient information
 - Conditions, medications, allergies
- Lab and clinic data relevant to chronic conditions
 - Function, Diabetes, heart failure, depression, hypertension
- Includes advisories for preventive care and chronic conditions





Patient Worksheet

16 November 2006		Patient Worksheet Selected to Print for: All Patients, All Sections, Last Clinical Note			u1.07.0 Comprehensive Version	
PATIENT NAME TEST, BED		SEX F	DOB 01/01/1911	MM# 650730	MRN# 5992114	
Problem:						
Diabetes Mellitus, Type 2 Hyperlipidemia		Chronic conditions				
Active Medications:						
1. - Glucophage (Metformin HCl), 500mg, Tablet, 1 TABLET, Daily 2. - Simvastatin, 10mg, Tablet, Oral; 1 TABLET, Daily 3. - Lisinopril, 10mg, Tablet, Oral; No dose for 1 day 4. - Calcium Carbonate/Vitamin D (Calcium 500 W/Vitamin D), 500-200, Tablet, 1 TABLET, BID						
Allergies:						
(-) Penicillins - A Drug Allergen Group; Reaction(s): Rash						
Disease Management:						
ADL		Pain Score (0-10)		MMSE		
11/16/2006 5		11/16/2006 4		11/16/2006 23		
Preventive Care:						
Pap Smear		Mammogram				
No Data		No Data				
Clinical Laboratory Data:						
HgbA1c (<=7.0)		U.A. Protein		uAlb:Cr (<=30)		24 Urine Albumin (<=30)
No Data		No Data		No Data		No Data
Serum K		Lipid Profile		LDL (<=100)		Trig (<=150)
No Data		No Data		No Data		TC/HDL Ratio
HCT		hsCRP		Homocysteine		
No Data		No Data		No Data		
Clinic Data:						
Date		Weight		BMI (<=25)		Weight Class
01/16/2006		144 lbs		23		Normal
01/11/2005		155 LBS		25		Normal
05/12/2003		50.00 N/A		-		Abnormal
Last botoceram:		11/2005		Abnormal		Last dilated retinal exam: 11/2005
						Abnormal
Reminders:						
Lab						
[] Creatinine - Patient on Metformin product(s) and no Creatinine on record.						
[] HgbA1C - Urine Albumin Test - DL - Serum Cr (should be done on all Patients with Diabetes)						
[] HCT - Serum K (should be done on all Patients with Diabetes)						
Procedure:						
[] Mammogram - Suggested yearly for women age 40 and above, every 1-2 years age 50 and above.						
[] Pneumovax - Suggested for all Patients age 65 and above, and those age 2 and above with chronic disease.						
[] Tetanus Immunization - Suggested yearly						
[] DEXA Screening - Suggested for women age 65 and over. Follow-up screening for those treated for osteoporosis recommended every 2-3 years.						
[] Colon Cancer screen - Suggested yearly rectal test or sigmoidoscopy Q 5 years, or colonoscopy Q 10 years.						

Wilcox, Proc of AMIA Symp, 2005





Care Manager Tracking Database

- Support management of patients by care managers
- Specific information with geriatrics, depression, heart failure, diabetes, hypertension
- Provides reminders for follow-up of chronic disease
- Supports research on care management



Patient Information

ID Number: Last Name: First Name:
 DOB: * Age: Sex:

Phone: Cell Phone: Email:
 PCP: PCP Phone:

Insurance: Facility:
 Diab Collaboration FPP:

Date of Referral: * Care Mgr: Status:

Patient Search

ID Number:

Last Name:

First Name:

Care Mgr:

Diag. Date	Diagnosis	Status	Sched Date	Sched Time	Encounter Type	Status
<input type="button" value="Edit"/> 2/28/2005	CHF	Active	<input type="button" value="Edit"/> 4/30/2005		Telephone Contact	Pending
<input type="button" value="Edit"/> 2/28/2005	Depression	Active	<input type="button" value="Edit"/> 1/30/2005		Home Visit	Resolved
<input type="button" value="Edit"/> 3/30/2004	Depression	Active	<input type="button" value="Edit"/> 1/26/2005		Telephone Contact	Resolved
			<input type="button" value="Edit"/> 10/18/2004		Telephone Contact	Resolved

MH Packet Date	Symp	Severity	Fctnal	Diff	Dysth.	Q9	Suicide State	Suicide Risk	[Mood 1 2 3]	MoodImp	MoodSx	AnxImp	AnxSx
<input type="button" value="Edit"/> 1/26/2005	1	3	Somewhat	<input checked="" type="checkbox"/>	0		No Risk						
<input type="button" value="Edit"/>							No Risk			16	45	14	52
<input type="button" value="Edit"/>							Low Risk						

Diab Assess Date

Diagnosis

Encounter

Meds

MH Instruments

Pediatric Assess

New Patient

Save Patient

Delete Patient

Generate Clinical Note by Date

Diabetes History

Diab Pre/Post Knowledge Assess

Patient Goals

HF Follow-Up

CMT database - example

Call



Care Manager Encounter Tickler List

Care Manager: Ann Larsen

Sched. Dt. and Time	Encounter Type	Enc. Reason	MMH	First Name	Last Name	Phone Number	Pri
2/17/04	Telephone Contact	DM F/U				(801)	Wo
2/17/04	Telephone Contact	DM F/U				(801)	Wo
2/17/04	Telephone Contact	DM F/U				(801)	Wo
2/17/04	Telephone Contact	DM F/U				(801)	Wo
2/17/04	Telephone Contact	Depression F/U				(801)	Obi
2/17/04	Telephone Contact	Dep F/u				(801)	Sm
2/17/04	Telephone Contact	DM F/U				(801)	Wo
2/17/04 6:30 AM	CM Office Visit					(801)	Wo
2/17/04 9:00 AM	Class					(801)	Smt
2/17/04 9:00 AM	Class					(801)	Met
2/17/04 9:00 AM	Class					(801)	Obi
2/17/04 9:00 AM	Class					(801)	Wo
2/17/04 10:40 AM	MD Office Visit	DM F/U				(801)	Wo
2/17/04 1:50 PM	MD Office Visit	DM F/U				(801)	Rur
2/17/04 3:00 PM	CM Office Visit					(801)	Wa
2/17/04 3:50 PM	MD Office Visit					(801)	Wo

Task List

Before 3/10

IHC. Also detail

do. wait pay at

pm from 8:30-3:30

5 people

pcp appears

Test

who 14 people

Home - do

Back - do

Turn on 5'

7-10 deep - 30 min.

If from cat effluents

Dr. McBride






Does CMP make a difference?

Study design:

- Retrospective cohort
- Comparison of care managed (CM) patients (7 clinics) with patients from similar clinics w/out care managers (n=4)
- CM patients matched to controls on key characteristics

Outcomes

- Disease control, death, hospitalization
 - Efficiency
- 

Guideline Adherence in Diabetes: Results

Outcome	Odds Ratio
Overdue for HbA1c test	0.79*
HbA1c Tested	1.42*
HbA1c in control (<7.0)	1.24*

* $p < 0.01$



Physician Perspectives of Care Management

- improved productivity
- improved quality of care
- better understanding of patient status
- higher provider satisfaction



Care Management Plus: RESULTS

Health outcomes

- ✓ **Reduced** hospital admissions: For patients with complex illness: Absolute reduction **4.5%** at one year & **8.7%** at two years; reduction for all patients **2.9%** at two years.
- ✓ **Increased** Guideline Compliance: **24-42%** increased compliance for diabetes, depression.
- ✓ **Reduced** mortality: Absolute reduction of 2.8% at 1 year and 3.4% at two years

Cost savings / Productivity

- ✓ **Total Savings**: For patients with complex illness, est. savings to Medicare **\$163k** per practice with expense of \$90k.
- ✓ **Savings** per patient: Decrease of **\$640** per patient per year
- ✓ **Increased** productivity: **8-12%** increase in work Relative Value Units / MD

Satisfaction

- ✓ Patient / Families: ‘ a life-saver’, ‘the reinforcement was wonderful’, ‘they really care’, ‘[CM] gives me more time ... and answers’
- ✓ Physician/ Nurses: ‘I am working smarter, not harder’, ‘Patients are less anxious, care more consistent, team is stronger’ ‘Wish I had these skills years ago’ ‘(Computer tools are) an absolute godsend’

Deaths: 6.5% died in CM+ and 9.2% in control at 1 year; 13.1% died in CM+ and 16.6% in control at 2 years.

Hospitalizations: Complex illness including diabetes: 1 year – CM+ 21.2%, Control 25.7%; 2 years 30.5%; control 39.2%; all: 31.8% vs 34.7% at 2 years (-2.9%)

Peer-reviewed references available online at www.caremanagementplus.org



Challenges



Provide better care at same or less cost.



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Visit:

www.caremanagementplus.org

John A. Hartford 2007 Annual
Report www.jhartfound.org





DISCUSSION

