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Integrated Care Coordination Information System

ICCIS: a tech-driven solution to improve care for older patients

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Value of ICCIS (and great care coordination)

Beneficiary	Previous value of CM+	New Value from ICCIS
Society	Reduce deaths and hospitalizations	Extend these benefits more broadly
Patients/ families	Help improve self-management and disease control	Improve health; Improve satisfaction; improve care coordination experience
Clinic	Improve productivity	Help meet meaningful use; change reimbursement models
Care managers	Keep better track of activities	Improve productivity and adherence to tailored protocols

Case Study: Ms. Viera

A 75-year-old woman with:

- diabetes
- systolic hypertension
- mild congestive heart failure
- arthritis
- recently diagnosed dementia.

Ms. Viera and her caregiver come to clinic with several problems, including:

hip and knee pain

trouble taking her 12 current medicines

dizziness when she gets up at night

low blood sugars in the morning

and a recent fall

Ms. Viera's office visit

And Out in the hall:

The caregiver confidentially notes he is exhausted

money is running low for additional medications.

How can Dr. Smith and the primary care team handle these issues?

Simple heuristics won't work: they don't capture the complexity. However, there must be a way ...

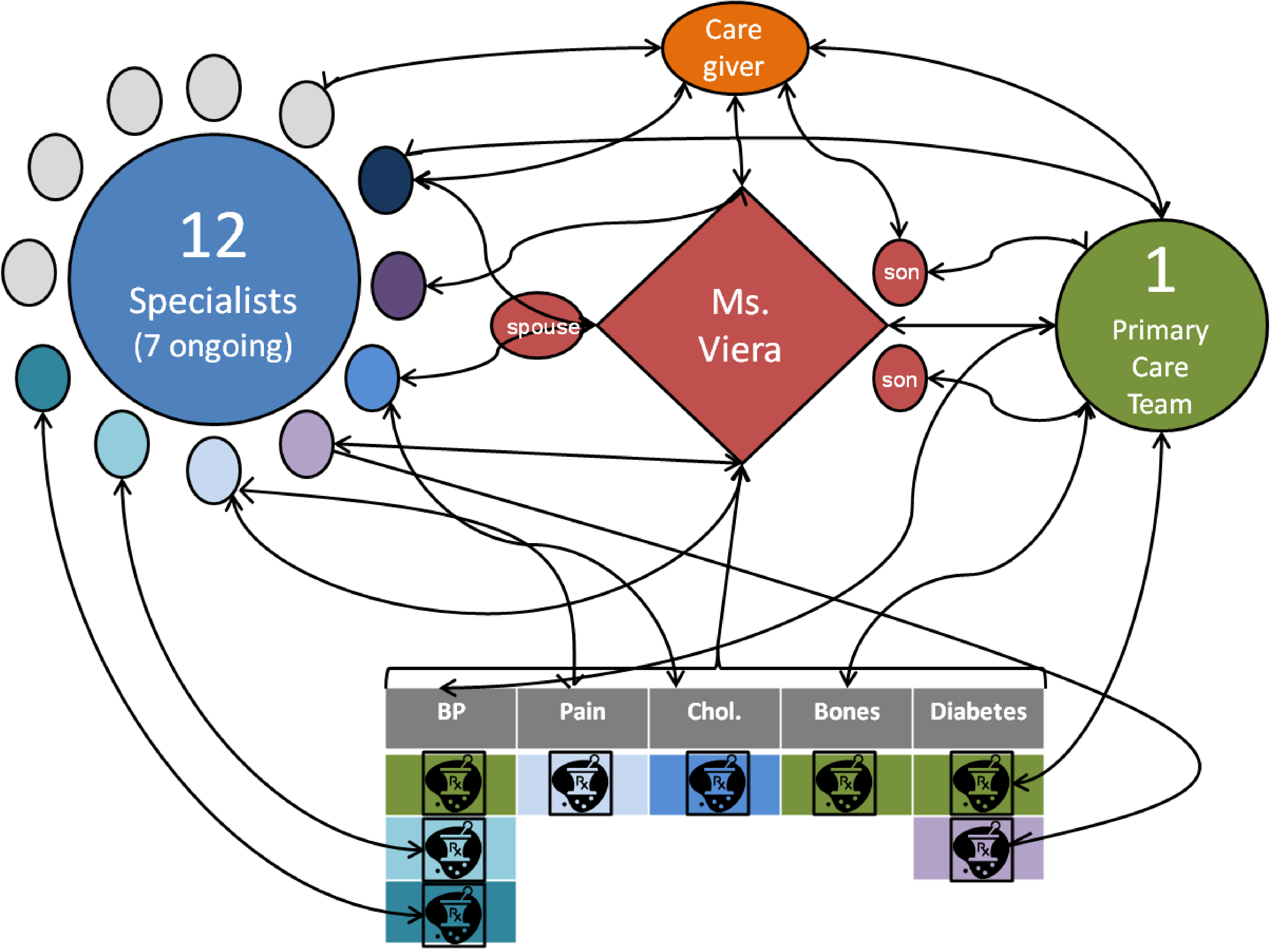
Past: Heroism in the face of multiple illnesses

Multiple diseases increase risk and coordination needs exponentially (5+ : 90 x risk of hospitalization; 10x prescriptions; 13 providers vs. 2)

To manage preventive and chronic illnesses in a primary care panel: 23 hours a day

Patients with multiple illnesses have better process quality scores but worse preventable hospitalizations and ***increased disability***

Bodenheimer, JAMA;C. Boyd, JAMA; Wolff, JAGS; Dorr, JAGS



Care giver
12
Specialists
(7 ongoing)
spouse
Ms. Viera
son
son
1
Primary Care Team
BP
Pain
Chol.
Bones
Diabetes

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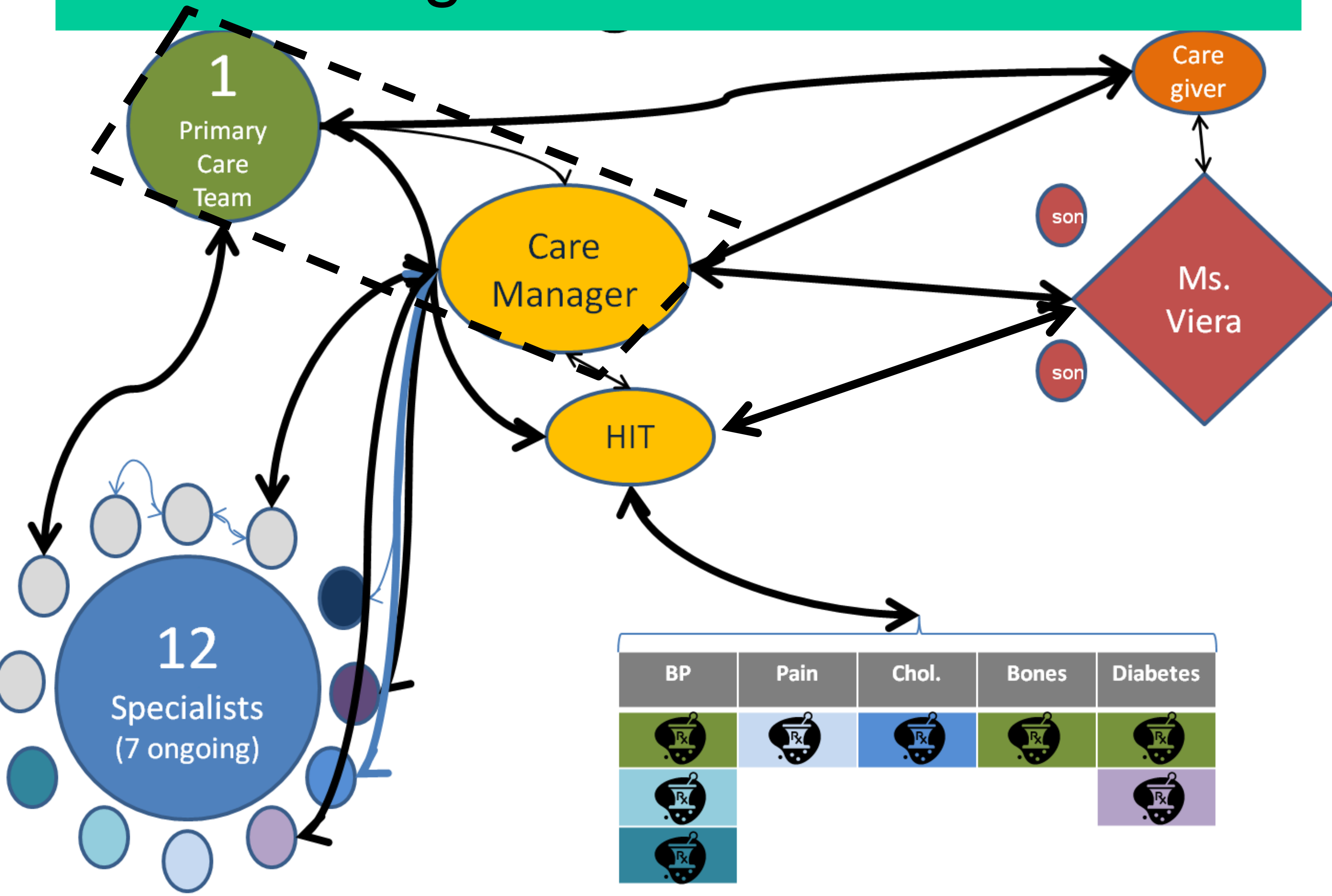
“Hello, computer”

Models of Care : Care Management +

Larger infrastructure: Electronic Health Record, quality focus

In 16 primary care clinics at Intermountain Healthcare

What changes with CM+ and ICCIS?



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Does CM+ make a difference?

Study design

Controlled trial

Comparison of care managed (CM) patients (7 clinics) with patients from similar clinics w/out care managers (n=6)

CM patients matched to controls on key characteristics

Outcomes

Disease control, death, hospitalization

Efficiency

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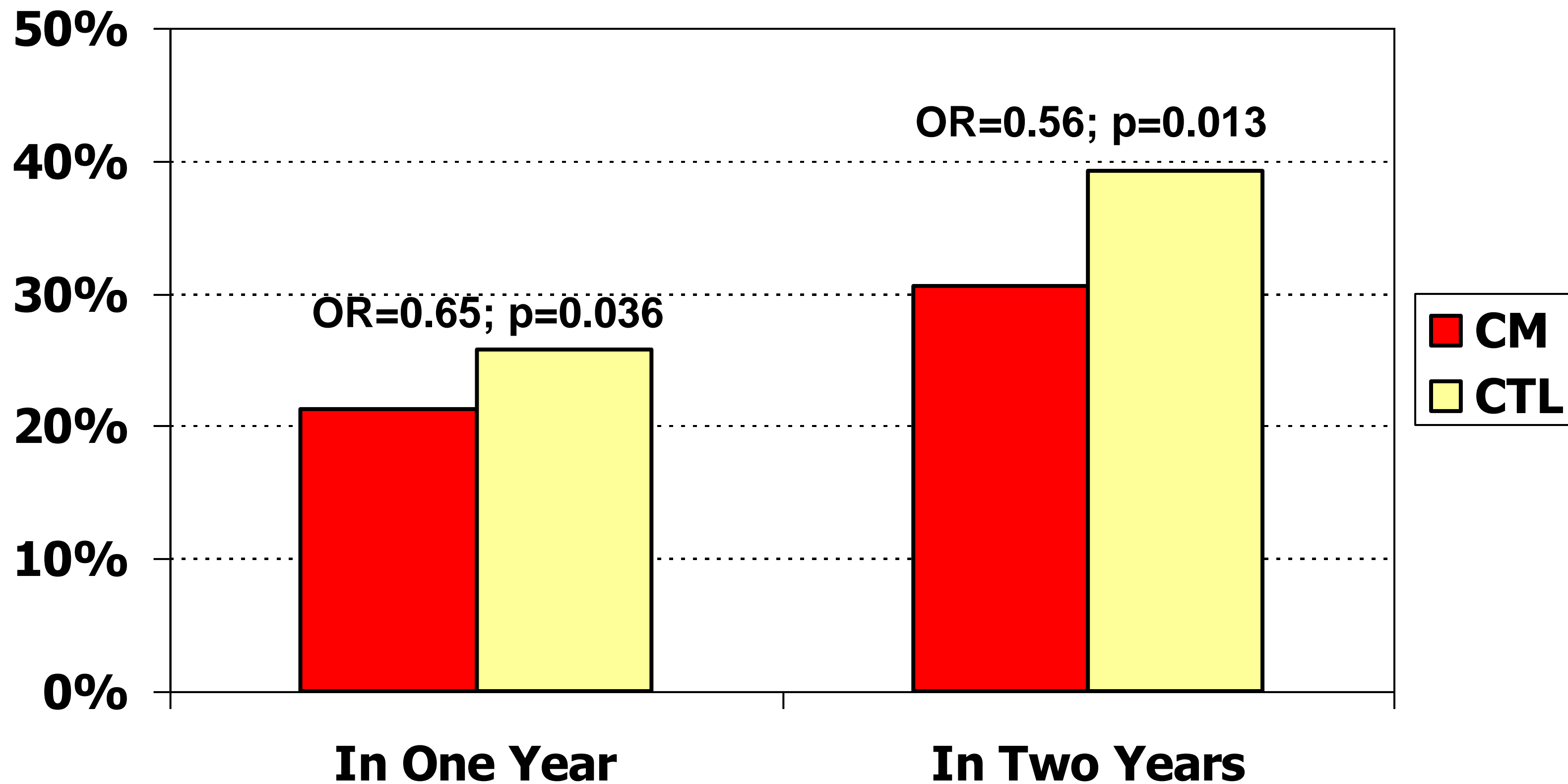
Reduction in hospitalizations from CM+



Dorr, JAGS, Dec 2008

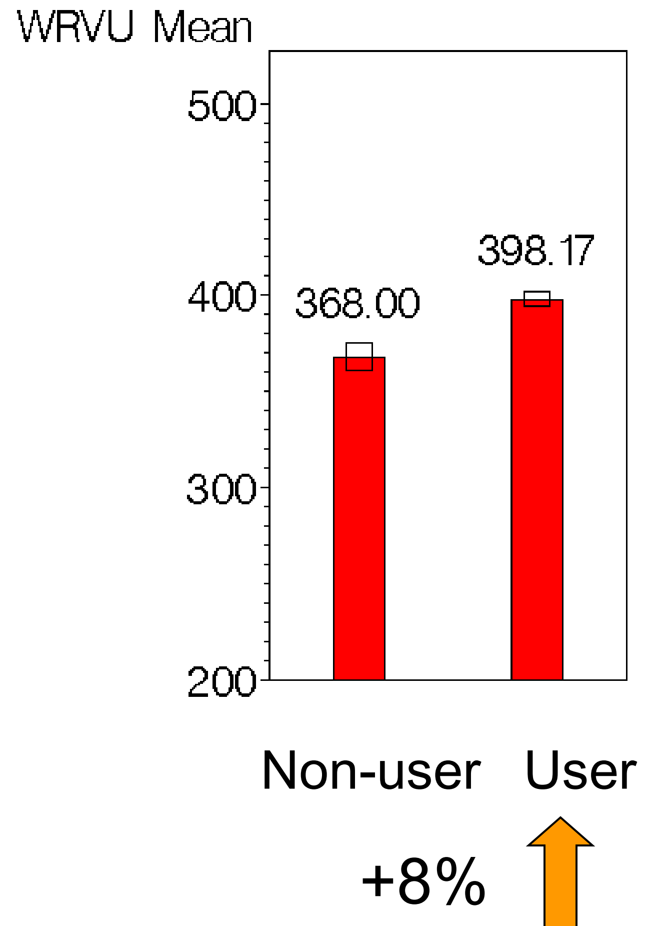
In CM+, Odds of dying were reduced by 20-40%.

Variable	Time	CM+	Control	Difference
All Patients		(N=1,144)	(N=2,288)	
	at 1 year	6.5%	9.2%	-2.7%
Deaths	at 2 years	13.1%	16.6%	-3.5%
Multiple illnesses		(N=557)	(N=1114)	
	at 1 year	6.2%	10.6%	-4.4%
Deaths	at 2 years	12.9%	18.2%	-5.3%

Dorr, JAGS, 2008

Physicians were more efficient through better documentation, a slight increase in visits, and a change in practice pattern.

Physicians who referred to care managers: 8% more productive than peers in same clinic



Dorr, AJMC, 2007

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Next generation: Creating an Integrated Care Coordination Information System (ICCIS)

Based on the Care Management Tracking tool and new interviews to gather needs and requirements of care managers and clinicians

Integrates EHR data into web tool; uses best practices to help achieve ‘meaningful use’ and medical home models

Implemented in a mix of rural and urban clinics with diverse patient demographics

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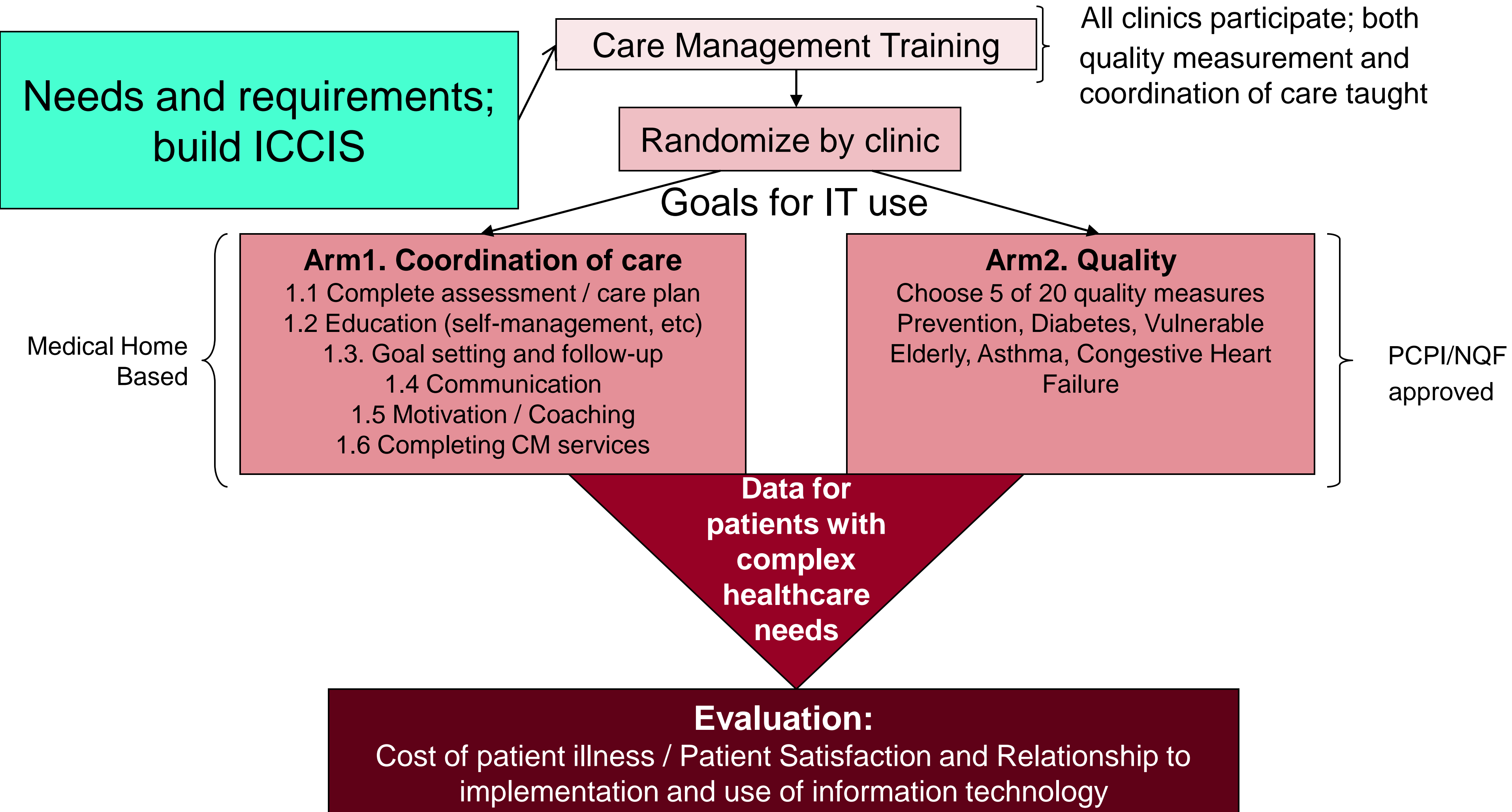
Randomized Trial



Results – Building ICCIS for 'Meaningful' Uses

Care Coordination

Population Management

Patient & Family Engagement

Tracking Labs, Care Plans, and Priorities

Improving quality & safety

Assessing Goals and Priorities

Functional Status and high risk issues for older adults

Add Function

Patient: Harry, Binnes **ID: 1324234**

Assessment Date:

Activities of Daily Living Score (ADL)
Able to do without help:

1. Get out of bed or chair ○yes ○no
2. Walk ○yes ○no
3. Take a bath or shower ○yes ○no
4. Get dressed ○yes ○no
5. Go to the toilet ○yes ○no
6. Feed self a meal ○yes ○no

ADL: 0

Plan care and track priorities

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ICCIS Care Management Plus

User: test_test Logout
Encounter Tickler

Home | Patient Information | Record Entry/Modification | Reports | Help

Reports

- Care Management Patient List
- Encounter Tickler
- Encounter Summary
- Patient Goal Progress
- PHQ9 List
- High Risk List
- Quality Measures

Care Manager Encounter Tickler List

Care Manager: <------ All ------> **Start Date:** 10/20/2009 **End Date:** 11/20/2009 Run

Care Manager: All Care Managers

For Time Period: 10/20/2009 to 12/20/2009

	Scheduled Date	Scheduled Time	Encounter Type	Reason	EHR ID	First Name	Last Name	Phone	PCP	Notes
Select	2009-12-05		CM Office Visit	Depression	15463147563	hank	Commons	541.214.3566	Jeremy Rogers	
Select	2009-12-05		Telephone Contact	Family/Caregiver Check	4987651	Jerry	Montoya	124.256.3526	Hillary Caseman	Check on care giver status. How is wife coping after fall?
Select	2009-12-04	08:00	Telephone Contact	Goals	1324234	Harry	Binnes	9874584587	Parnel Fieldman	PHQ9 Follow-Up: Goals Follow-Up:
Select	2009-11-28		CM Office Visit	Clinical Protocol (s)	4582317	Mariah	Bouchard	456.732.5236	Carl Generic	

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Communication and Caregiver needs

Communication

Edit Encounter Information
Patient: Harry, Binnes **ID: 1324234**

Scheduled Date:		Scheduled Time:	Tip: Type 'A' or 'P' to switch AM/PM	With:	Patient	Family/ Caregiver
Encounter Type:		Encounter Reason:			Clinician	Other

Caregivers

Can they see the caregiver **every time** they log in?

Patient: Harry Binnes **ID: 1324234** ICCIS Priority Patient

DOB:	01/24/1956	Age:	53	Sex:	M
		Race:	Unknown		
Phone:	9874584587	Cell:		Email:	
Caregiver:	Janet Binnes, daughter	Caregiver Phone:	9874584523	CG Email:	JBin@gmail.com
PCP:	Carl Generic	PCP Phone:	5921256565		

Population management: Proactive and Focus on Risks

Population registries usually focus solely on disease:

Improve disease-specific indicators but are less effective at overall improvement (utilization)

Risk stratification may help (Dorr et al, JAGS, 2006), but must deliver to those who need it!

Risk lists allow focus on overall risk

High Risk Patient List Report

ICCIS Only   Clinic Only   Both ICCIS & Clinic

EHR ID	Last Name	First Name	Clinic Priority	ICCIS Priority	Phone	Physician
1324234	Binnes	Harry	High	Normal	9874584587	
65748398	Cline	bobby	High	Normal	987.546.7765	Hillary Caseman

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Interactive Quality Improvement

Select another Measure

Selected Measure: Diabetics with hemoglobin A1c measured in the past 6 months (18-75)

Total: 127

Print

Value Adherence Rate: 60.63% **Date Adherence Rate: 31.496%**

Update Update

No Longer in Practice	Assign to CM Task	Patient	Phone	Physician	Lab	Lab Result	Lab Date	Exclude from ALL Diabetes Measures	Exclude from this Measure ONLY
☐	☐	[illegible]	[illegible]	[illegible]	A1C	5.9	12/23/2008	☐	☐
☐	☐	[illegible]	[illegible]	[illegible]	A1C	5.7	09/24/2009	☐	☐
☐	☐	[illegible]	[illegible]	[illegible]	A1C	6.2	02/11/2008	☐	☐
☐	☐	[illegible]	[illegible]	[illegible]	A1C	7.4	09/18/2009	☐	☐
☐	☐	[illegible]	[illegible]	[illegible]	A1C	8.0	01/14/2009	☐	☐

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Patient and Family Engagement

Patient Worksheet

Binnes, Harry	PRINT

MRN: 1324234 **Sex:** M **DOB:** 01/24/1956
Phone: 9874584587 **PCP:** Parnel Fieldman
Care Manager: Susie Example **Caregiver:**

Next Care Management Encounter

No Records Found

Last Care Management Encounter

Sched Date	Sched Time	Encounter Type
01/06/2010	09:00 AM	CM Office Visit

Diagnoses

Diabetes, Cystic Fibrosis, Anemia

Medications

Medication	Dosage	PRN	Med Start Date
albuterol		☐	08/07/2008

Goals

Status	Follow Up Date	Goal	Note	score	Set Date
Completed	12/21/2009	Nutrition		10	12/05/2009
Completed	12/21/2009	Activity		5	12/05/2009
Completed	11/13/2009	Activity		6	11/13/2009
Completed	11/13/2009	Nutrition		8	11/13/2009
Pending		Meds			10/06/2009

Care Actions

Diabetes	Date/Value	Status
A1c in Last 6 mo	10/06/2009	OK
A1c < 7	9.1	**A1c out of Range**
LDL Last Year	09/30/2009	OK
LDL < 100	130	**LDL HIGH**

Last Doctor's Visit is not available

Preventative Care	Date/Value	Status
Patient > 50 needs flu shot at least once		**YES**

- **Clinical Summaries**
- **Personal Health Records**

Progress

Patient Information | Record Entry/Modification | Reports

Clinic Overall Summary Report

Report Date: 5/24/2010 9:11:11 AM for time period: 4/1/2010 12:00:00 AM to 7/1/2010 12:00:00 AM

Total Number of Patients in Clinic: 16438

Enrollment:

Status Type	Count
1X Only	4
Active	175
Maintenance	1

Total: 180

Number of Patient Worksheet Views: 29

Coordination Encounters:

Encounter Type	Count
Telephone Contact	164
MD Office Visit	146
Email/Letter/Fax	8
CM Office Visit	7
Record Review	4

Total: 329

Coordination Activities Completed:

Activity	Count
Assessment	40
Goals	17
Education	12
Motivational Interviewing / coaching	8

Top10 Diag

Category
Pain
Hyperlipiden
Hypertensior
Depression
Thyroid Disease
Anxiety
Diabetes
Asthma
Cancer
Osteoarthriti

Clinic Quality

Measure	
A1c < 7.0% (18+)	HbA1c < 7.0%
BP Control	Patients, aged hypertension w mmHg as meas
LDL	Diabetic patien panel measurin will be at the ta test.
PHQ2 (18+)	All clinic patien previous diagno the PHQ2 in the
Pneumovax	Diabetics over t pneumovax.

In this quarter starting on 4/1

Quality Report Run 26 time

Quality Encounters Complet

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Further Information

Care Management Plus System:
caremanagementplus.org

David Dorr, dorrd@ohsu.edu

ICCIS Project Manager:
Gwen Olsen, olsengw@ohsu.edu

Activity Limitations by Number of Chronic Conditions

-Addition of fx limitation increases cost: on average cost doubles from $5600/ yr to $11,200/yr

- Fx limitations are strong predictors for mortality over the next 4 yrs*

Source: G. Anderson, "Hospitals and Chronic Care", PowerPoint Presentation to the American Hospital Association. Partnership for Solutions. 16 June 2004.

S. Lee, "Development and Validation of a Prognostic Index for 4-Yer Mortality in Older Adults" JAMA. 2006;295(7):801-808.

PLAN CARE …	TRACK …
PRIORITIES	TICKLER! Vs. Patient Worksheet
GOAL SETTING	Automate
Caregiver needs	Allow specification
Communication	With whom?

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*

*$p<0.01$

Dorr, HSR, 2005