



Funded by the
John A. Hartford foundation,
The NLM, and AHRQ

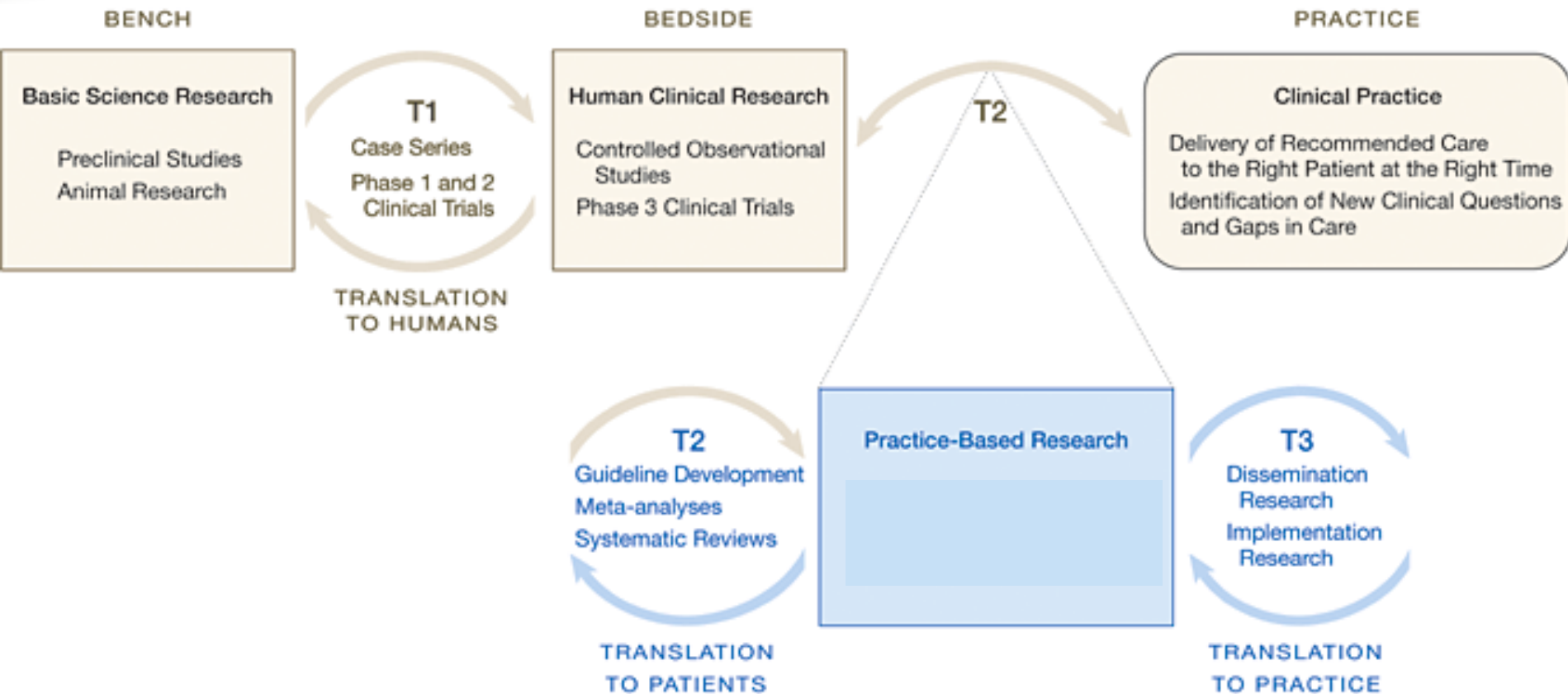
Initial development at
Intermountain Healthcare

Care Management Plus : Improving translational science through informatics

David A. Dorr

Date: May 8th, 2008

What is translation research?



Roadmap to this talk

BEDSIDE

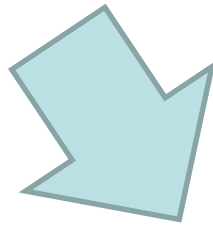
PRACTICE

Human Clinical Research
Controlled Observational
Studies
Phase 3 Clinical Trials

Clinical Practice
Delivery of Recommended Care
to the Right Patient at the Right Time
Identification of New Clinical Questions
and Gaps in Care



What are the gaps in translation into clinical practice?
Why does health care not provide a 'reliable system'?



Can quality improvement provide more reliable systems? Can 'models of care' like Care Management Plus?
What is the role of informatics?



How do we study implementations?

How do we spread implementation success (dissemination)?
What is the role of informatics?

Failure to translate is international ... with each system having its struggles.

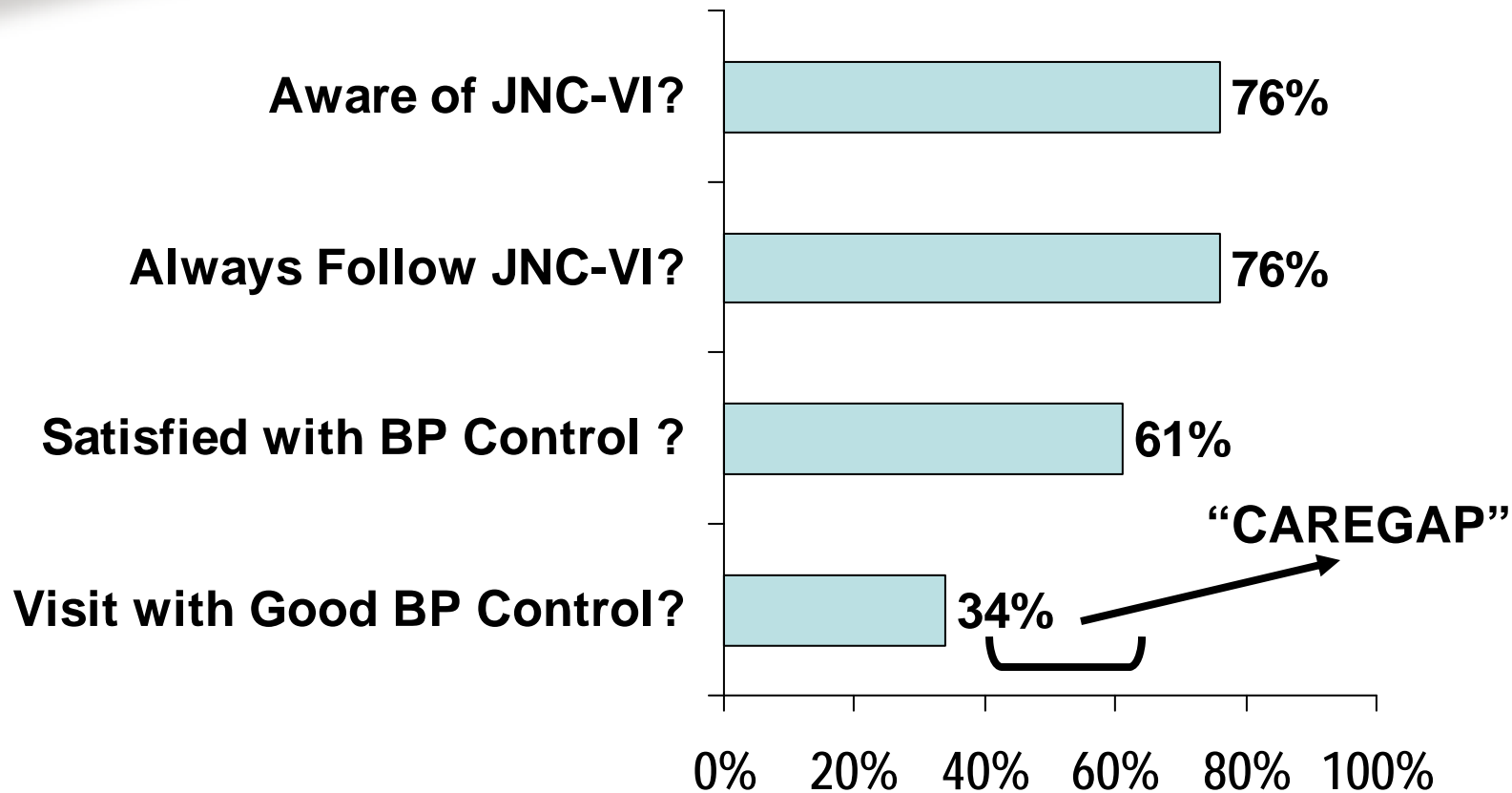
<i>Key: higher rates are better (gold = best and red = worst country performance)</i>	AUS	CAN	GER	NZ	UK	US
Hemoglobin A1c test in past 6 months (to monitor blood sugar control)	86	90	91	79	85	90
Foot examination in past year	57	52	65	66	75	70
Eye examination in past year	73	73	85	66	83	69
Cholesterol check in past year	93	91	95	87	92	92
All four recommended services	41	38	55	40	58	56

(Schoen, C. et al. 2006). AUS = Australia; CAN = Canada; GER = Germany; NZ = New Zealand; UK = United Kingdom; US = United States.

Source: McCarthy and Leatherman, Performance Snapshots, 2006. www.cmwf.org/snapshots

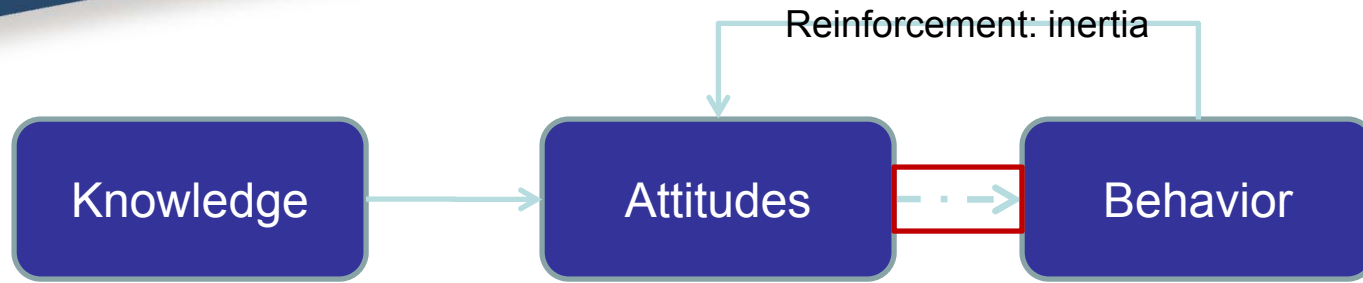


What are the gaps to translation into practice?



(Oliveria et al. Arch Intern Med. 2002;162)

Knowledge, attitudes, and behavior lead to failure of translation.

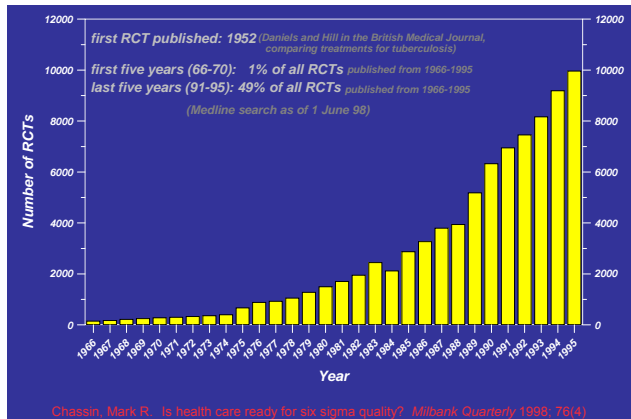


“Don’t know”

“Don’t agree”
“Don’t care”

“Just don’t” -
-Time
-Organizational
-Patient

System
doesn’t
support

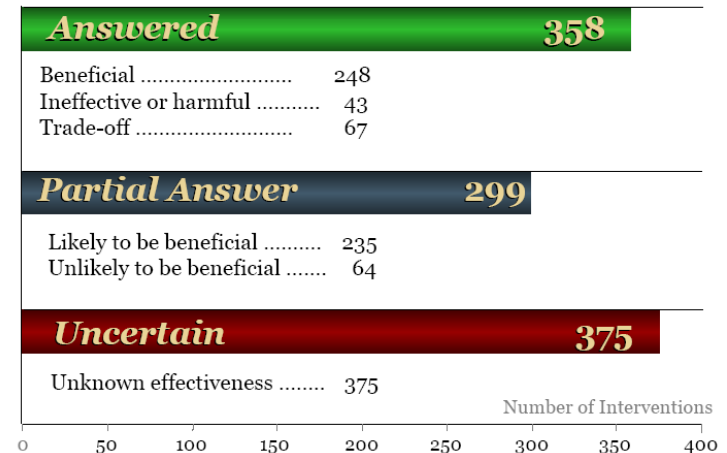


(Heavily) adapted from Lang et al (AEM, 2007) from Cabana, 2003.

Gaps in translation also come from the scope and size of information and knowledge needs.

- Information/knowledge needed is
 - Enormous
 - Challenging to find
 - Lacking
 - In the wrong form
 - Time-consuming to communicate

How many questions have any evidence? (BMJ 2000)



From Paul Keckley, 2004; Vanderbilt

What are we trying to accomplish?

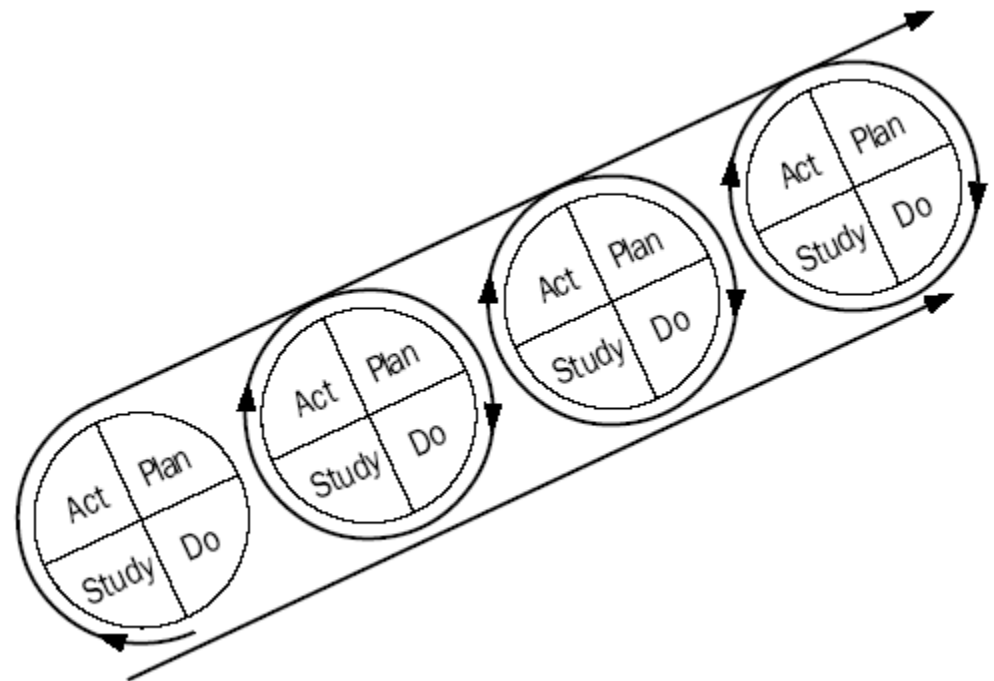
What changes can we make that will result in improvement?

How will we know that the change is an improvement?



- **guidelines may contain too many changes; therefore, select one or two to focus on at a time**

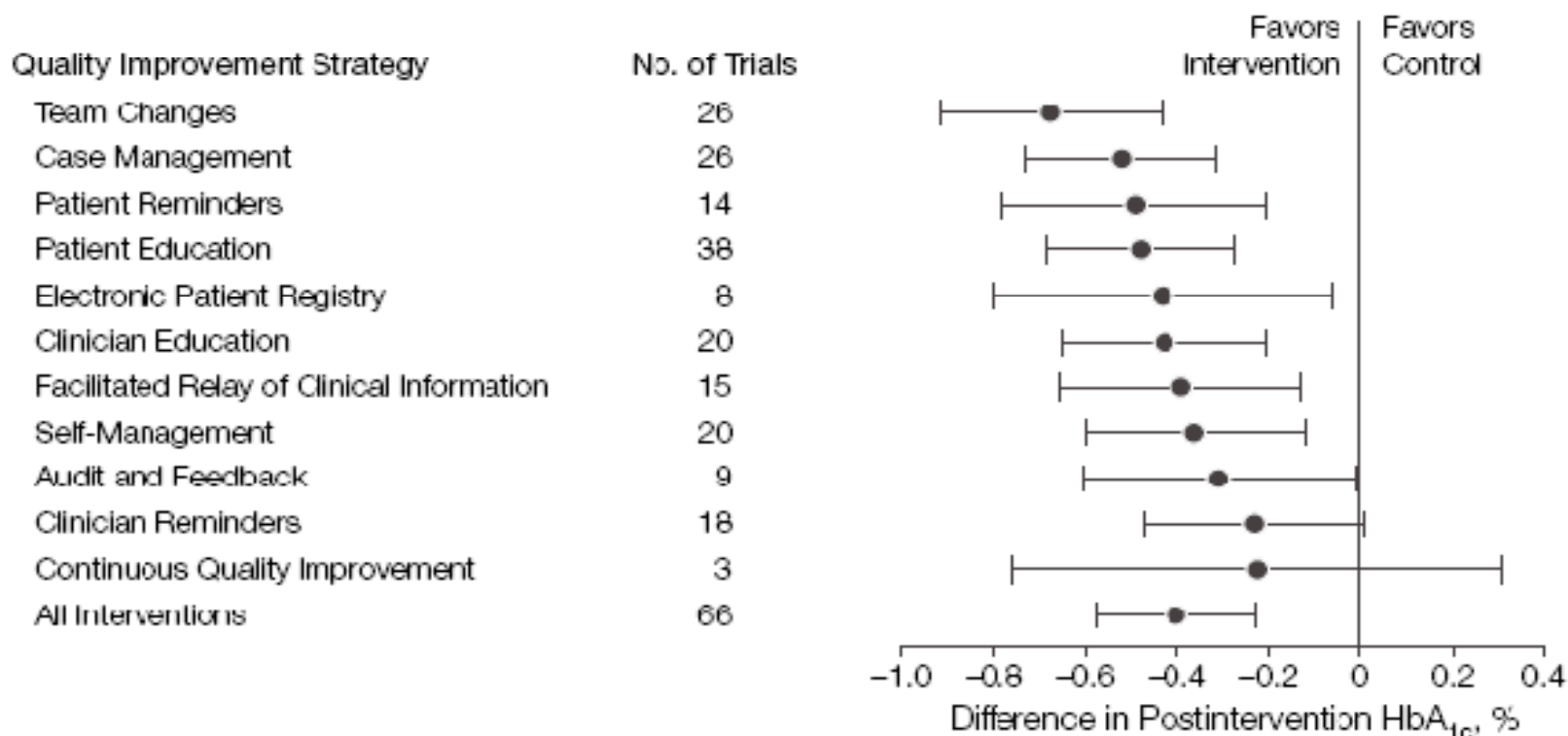
Can quality improvement increase T3 translation?



Can QI improve practice?

66 trials of HbA1c reduction in Diabetes

Figure 2. Postintervention Differences in Serum HbA_{1c} Values After Adjustment for Study Bias and Baseline HbA_{1c} Values

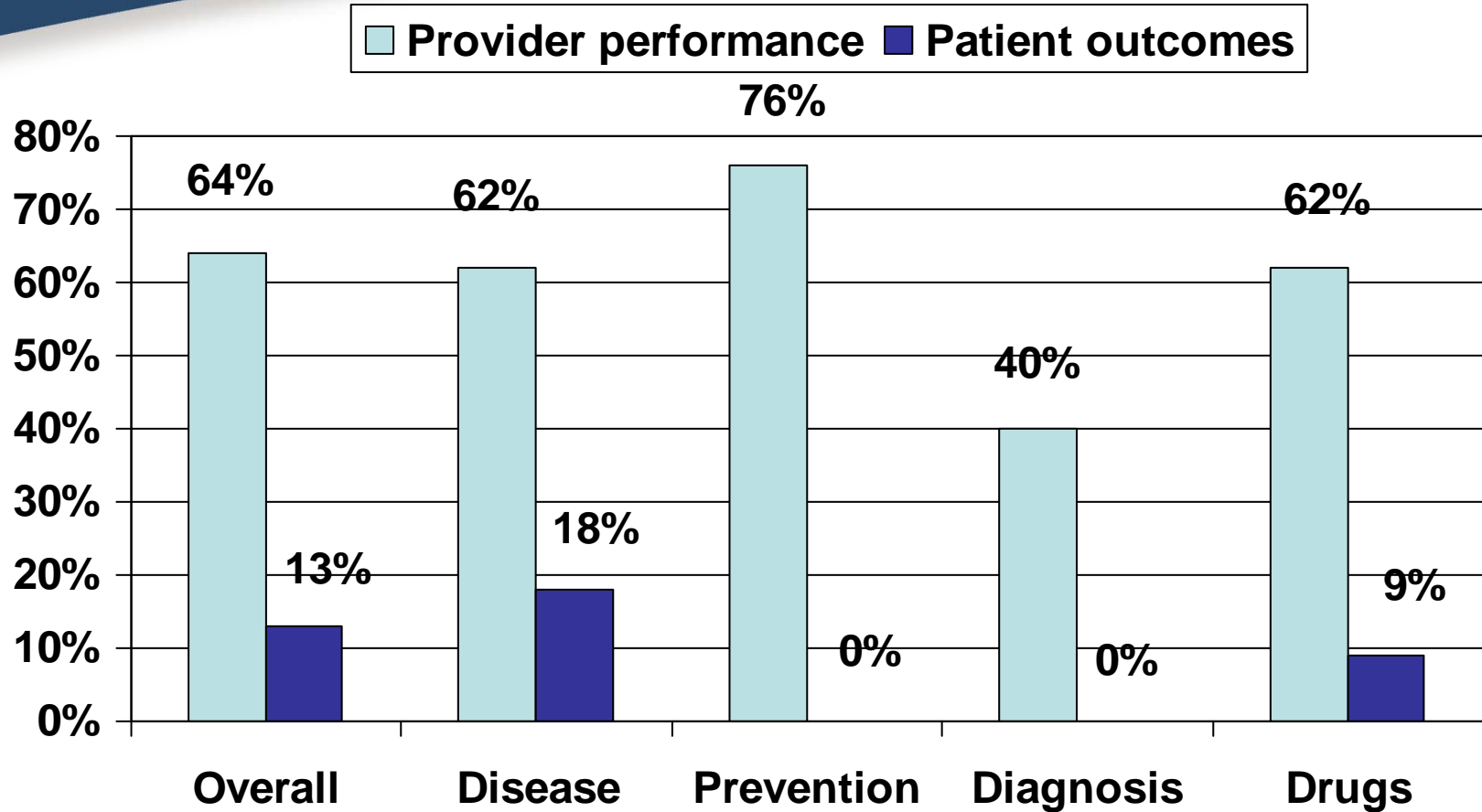


Shojania et al, JAMA 2006 vol 296, no 4, p 427

Specific strategies to improve quality

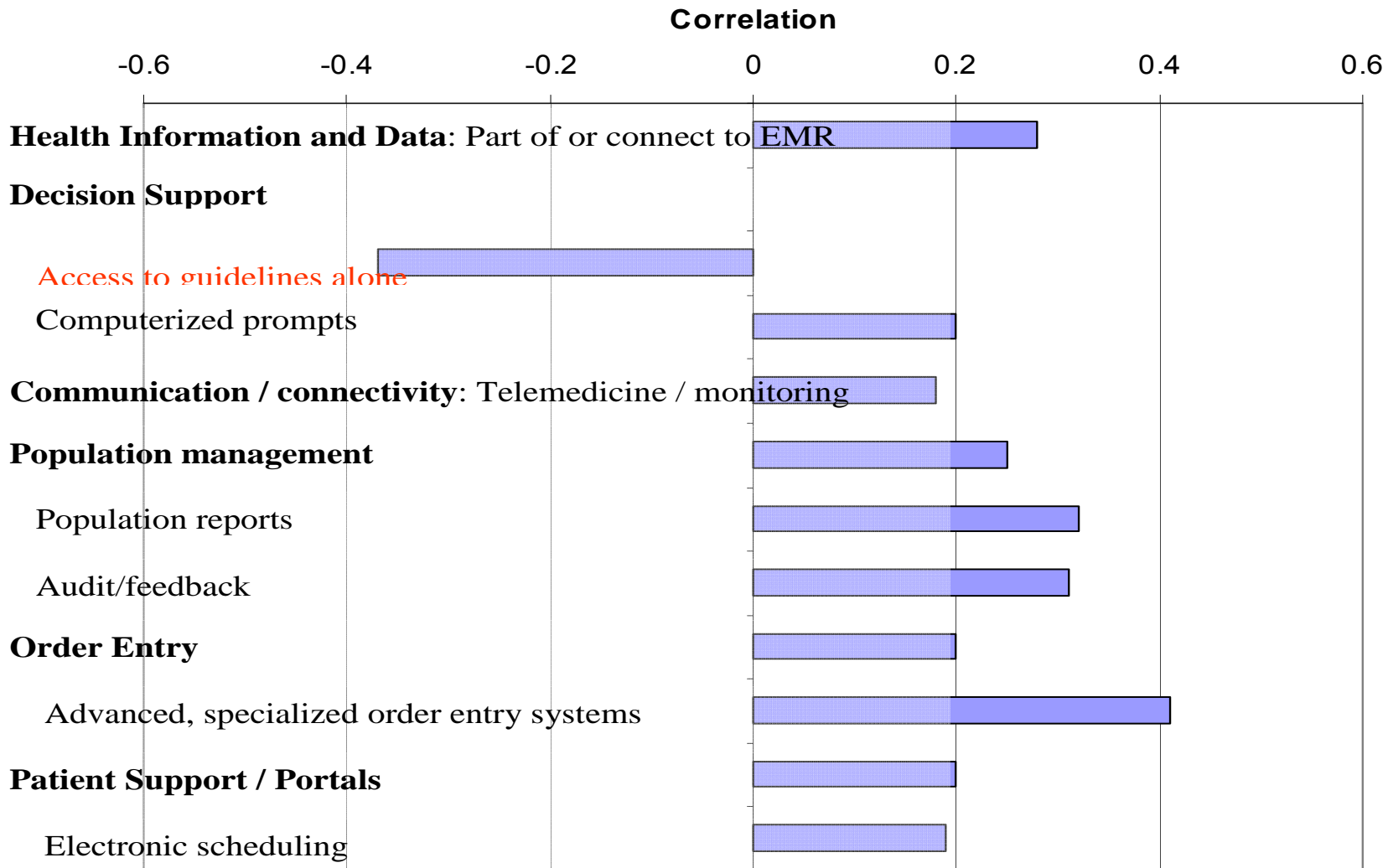
Strategy	Example (informatics)	Effectiveness
Provider education	Academic detailing (online, interactive)	↑ provider knowledge, not outcomes
Decision support	Reminders, alerts, ticklers (CDSS)	Reminders <i>can</i> be effective
Audit/feedback	Provider profile of diabetic patients (all)	Likely some effect
Patient education	Group sessions with care manager (interactive electronic education)	Moderate to large effect
Organization change	Change team: care manager	Positive for care/dis. management
Financial incentives	Pay for performance	Results mixed

% of Studies showing improvement from CDSSs



Garg et al, JAMA 2005

Patients with chronic illness: more than simple informatics functions



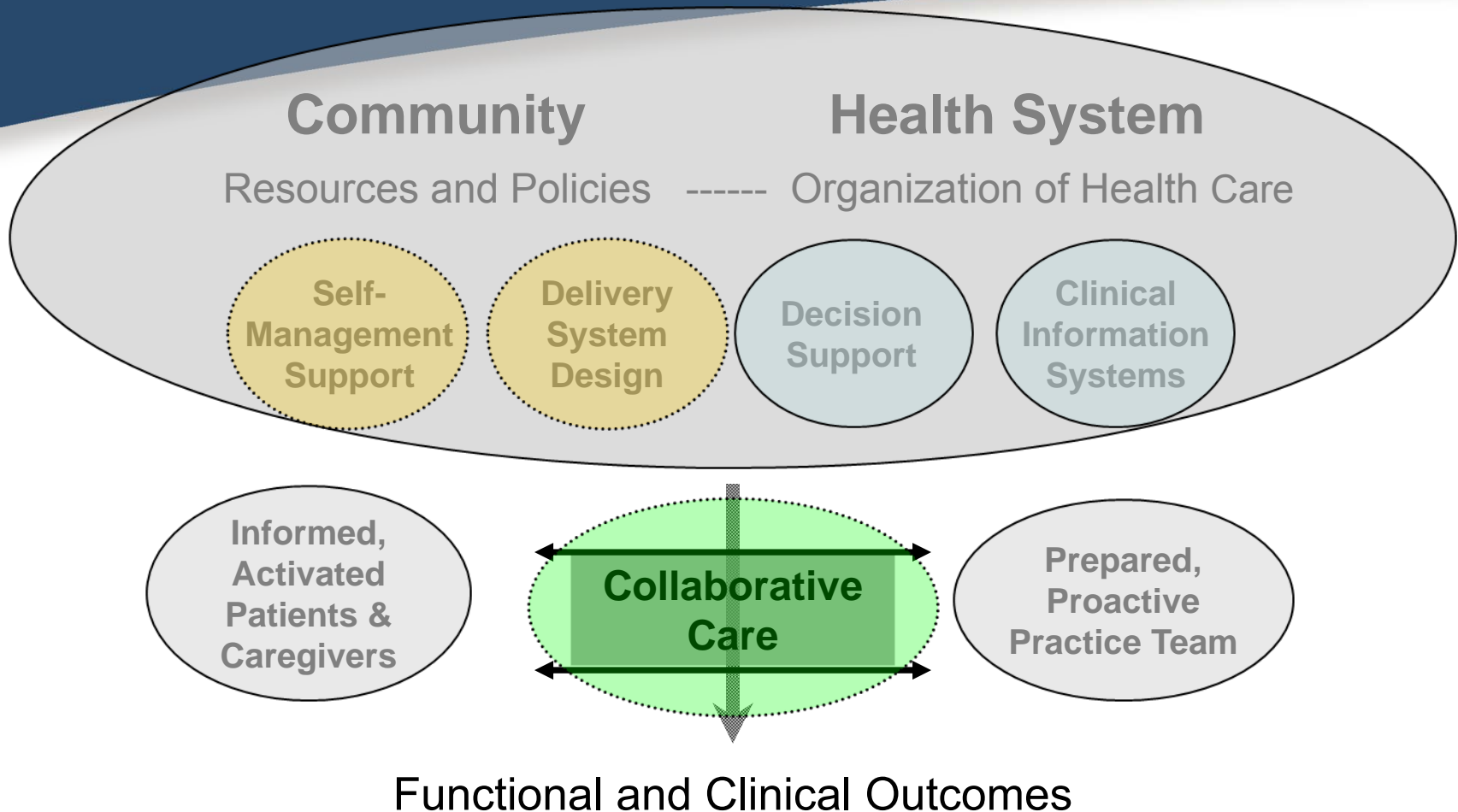
Dorr et al, JAMIA, 2007

Can 'models of care' improve translation?

- Reviews of components indicate multifaceted approach may increase success
- Change is a multistep process
- Team-based approaches are generally more successful; teams require development
- *Implementation success* depends on cultural change

Casalino, 2005
Weingarten, 2003
Shojania, 2006
McDonald, 2006

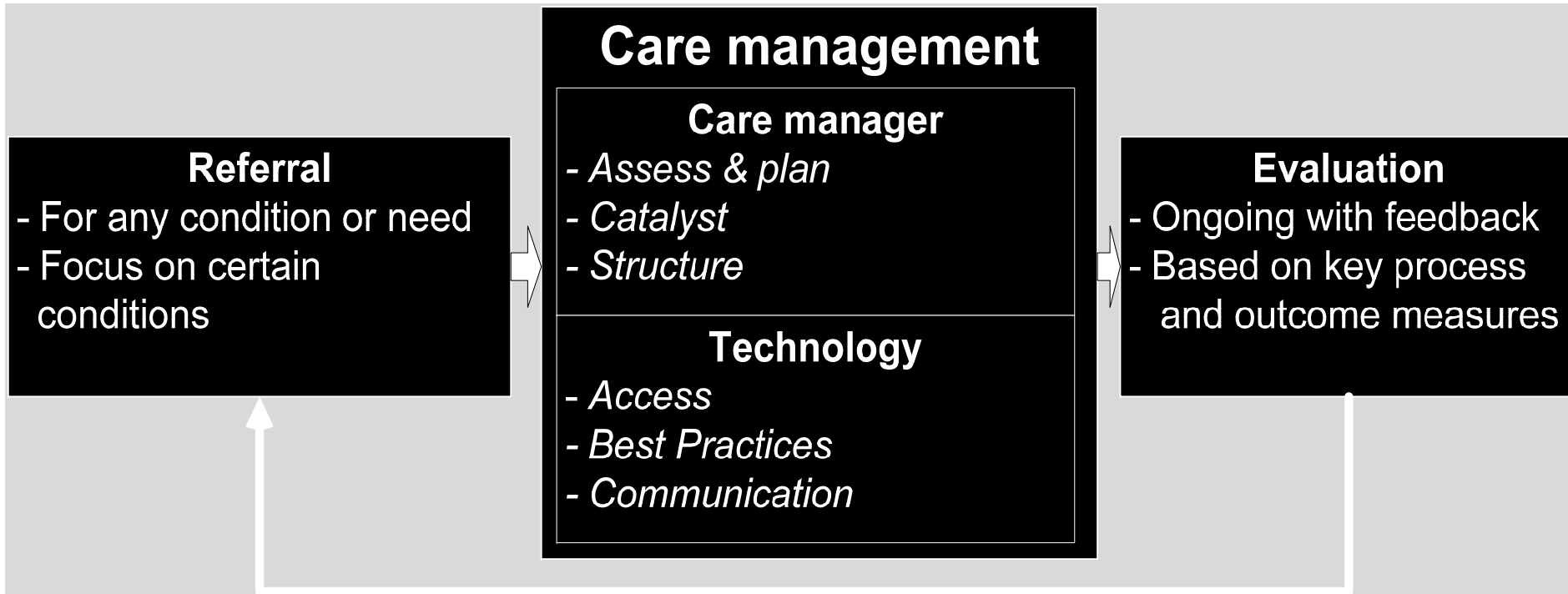
Improving Care for Chronic Illness



From: E.H. Wagner & RWJF Improving Chronic Illness Care Initiative

Care Management Plus fills in core gaps in many clinics through a proactive, flexible system.

In primary care clinics



Larger infrastructure: Electronic Health Record, quality focus

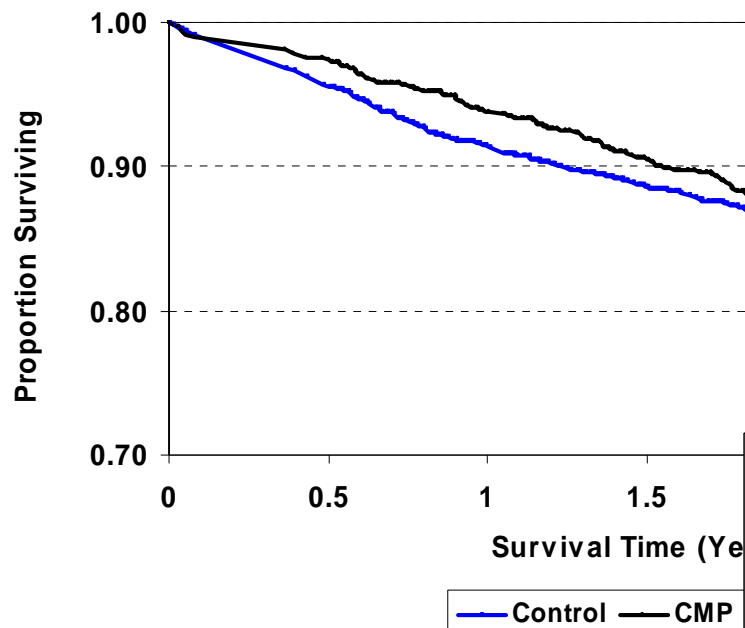
Guideline Adherence in Diabetes: Results

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

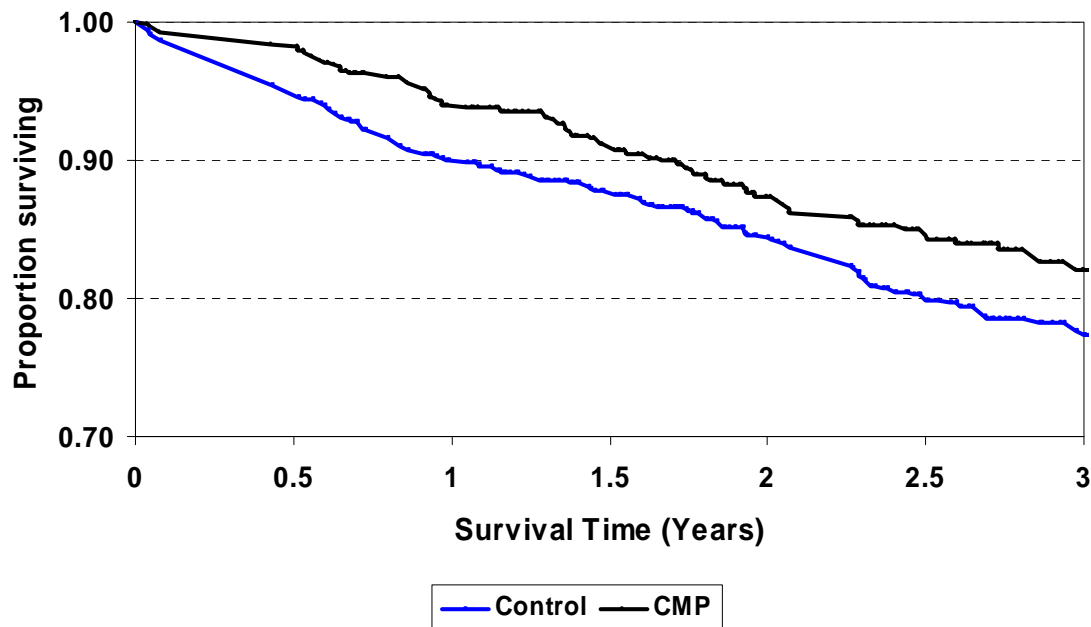
* $p < 0.01$

Odds of dying were reduced significantly.

1.a All Patients

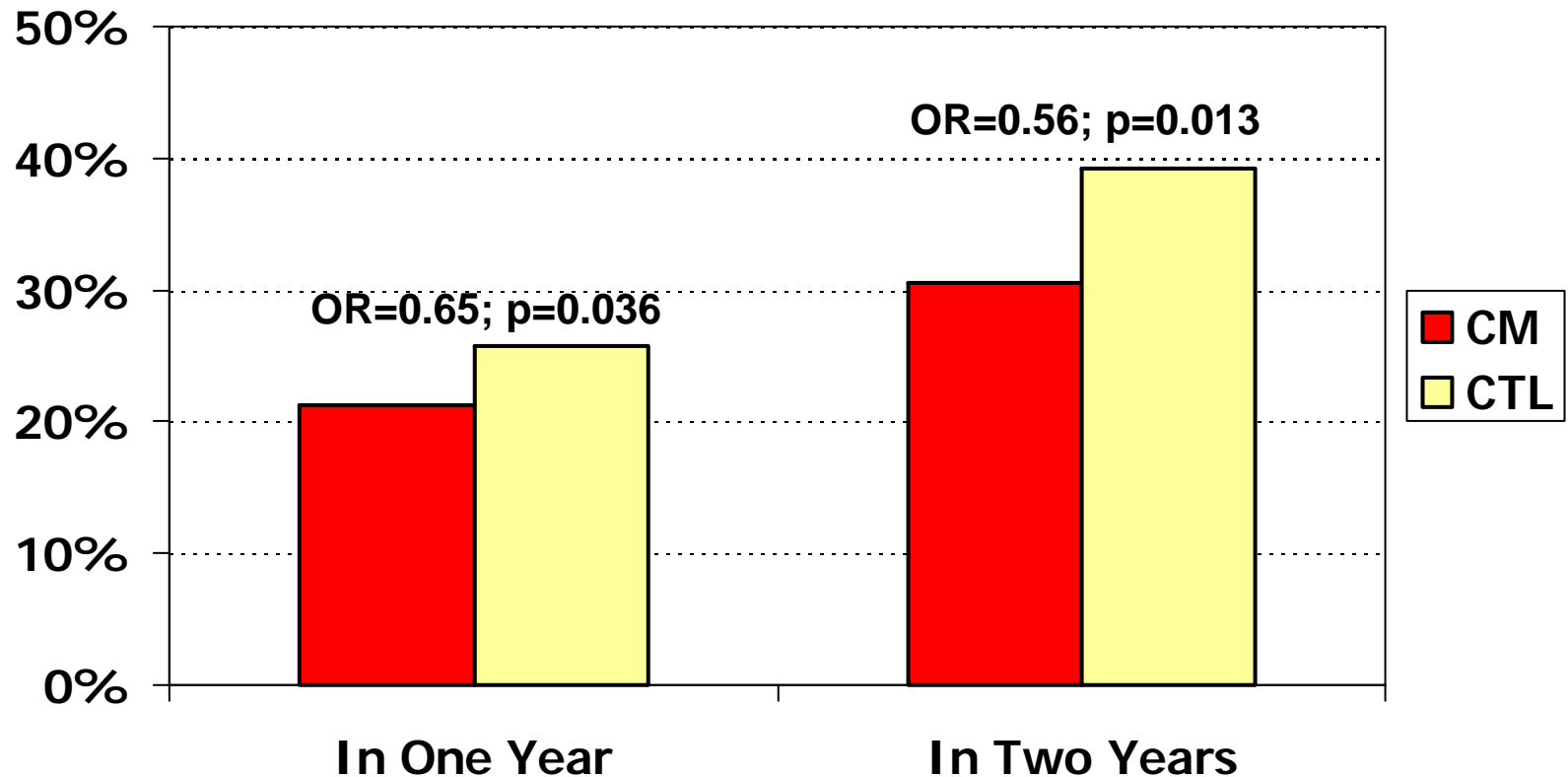


1.b Patients with diabetes



Dorr, AcademyHealth, 2006

Odds of admission (any cause) were reduced by 27-40% for patients with complex diabetes.



The right people on the team with the right training is a core principle.

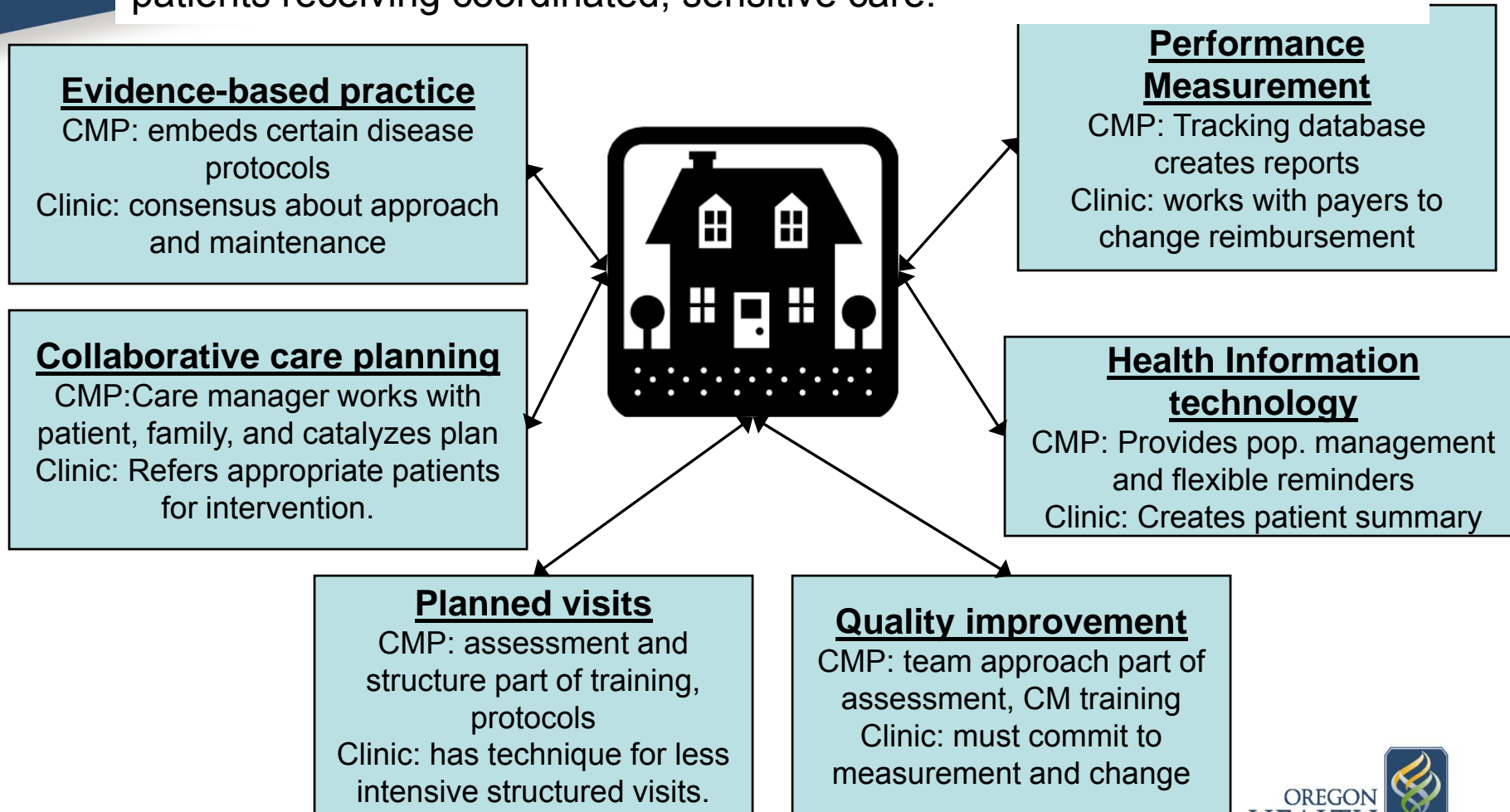
Patients are taught to self-manage and have a **guide** through the system.

Care managers receive special training in

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

Care Management Plus can help create a medical home.

Care Managers act as a guide, coordinator, and helper to facilitate patients receiving coordinated, sensitive care.



What is the role of informatics in 'models of care'?

- Nearly all* models highlight 'informatics' as a core element.
- Elementary – the ABCs ...
- **A**ccess to (and adding to) knowledge and information
- reminding about **B**est practices
- **C**ommunication
- (plenty of other roles)

Patient worksheet

11 July 2003		Patient Worksheet			v1.0.21		
PATIENT NAME TEST, A A		SEX F	DOB 09/01/1964	MMI# 545073664	MRN# 545073664		
Problems							
Hyperthyroidism status post appendectomy Diabetes mellitus type 2, insulin							
Active Medications							
1. - Digitoxin, 0.1mg, Tablet; 3 TABLET 2. - Entex LA (Guaifenesin/PPA HCl), 400-7							
Preventive Care							
CV Risk 5%*(1.4x)**							
Clinical Laboratory Data							
HgbA1c (<=7.0)		UA Protein		uAlb/Cr (<30)		24 Urine Albumin (<30)	
No Data		06/01/2001 12/18/2000 11/06/2000		Negative Positive Negative		No Data No Data	
Serum Cr		Serum K		Lipid Profile		LDL (<100) Trig (<200) HDL (>35) CHOL (<200)	
04/26/2003		04/26/2003		04/26/2003		117 93 50 178	
10/25/2002		02/05/2003		02/05/2003		41 41 212	
02/27/2002		10/25/2002		10/25/2002		41 220	
10/03/2001		01/29/2002		01/29/2002		33 239	
TCHDL Ratio		HCT		hsCRP		Homocysteine	
04/26/2003		02/05/2003		04/06/2003		0.6 mg/l 04/06/2003 6 mcmol/l	
04/06/2003		10/02/2002		02/24/2003		1.2 mg/l	
02/24/2003		08/23/2002				01/02/2002 127	
02/06/2003		07/19/2002				12/20/2001 127	
Clinic Data							
Date		Weight		BMI (<25)		Weight Class	
No Data							
Last foot exam:		No Data		Blood Pressure (<130/80)		Heart Rate	
				01/25/2001 145/74 mmHg		01/25/2001 86	
Last dilated retinal exam:		No Data					
Reminders							
Preventive							
* Predicted % Risk over 10 years of a cardiovascular event (MI, revascularization, CVA, death). ** Relative Risk over 10 years of a cardiovascular event compared to lowest risk category. Pap and pelvic suggested every 3 years after three normal yearly Pap tests. For Patients with known Cardiovascular Disease, target LDL < 100. Blood Pressure measurement is suggested for adults every two years. Suggested follow-up for missed appointments: 1 month. Pneumovax suggested every 5 years for adults aged 65 and older.							
Diabetes							
Suggest repeat Urine Albumin more than (>) 1 year since last test. Last ALT = 28 on 4/26/2003. ASAT = 12 on 4/26/2003. Suggested follow-up for missed appointments: 1 month.							
Hypertension							
ACE Inhibitors (ACEI) or if ACEI intolerant, Angiotensin II Receptor Blockers (ARBs) or the combination of ACEI or ARBS and Diuretics are the recommended initial drug therapy for patients who are diagnosed with hypertension in conjunction with Diabetes.							

Results

- increased process adherence by 17-30%.
- Access + Best Practice

Chronic conditions

Medications

Preventive care summary

Pertinent labs

Pertinent exams

Passive recommendations

Organized by illness

Not all models use electronic aids ...

Call (_____)
at (____) ____ - ____

with questions or concerns
if you have difficulty contacting your
PCP, specialist, or home care nurse

From caretransitions.org

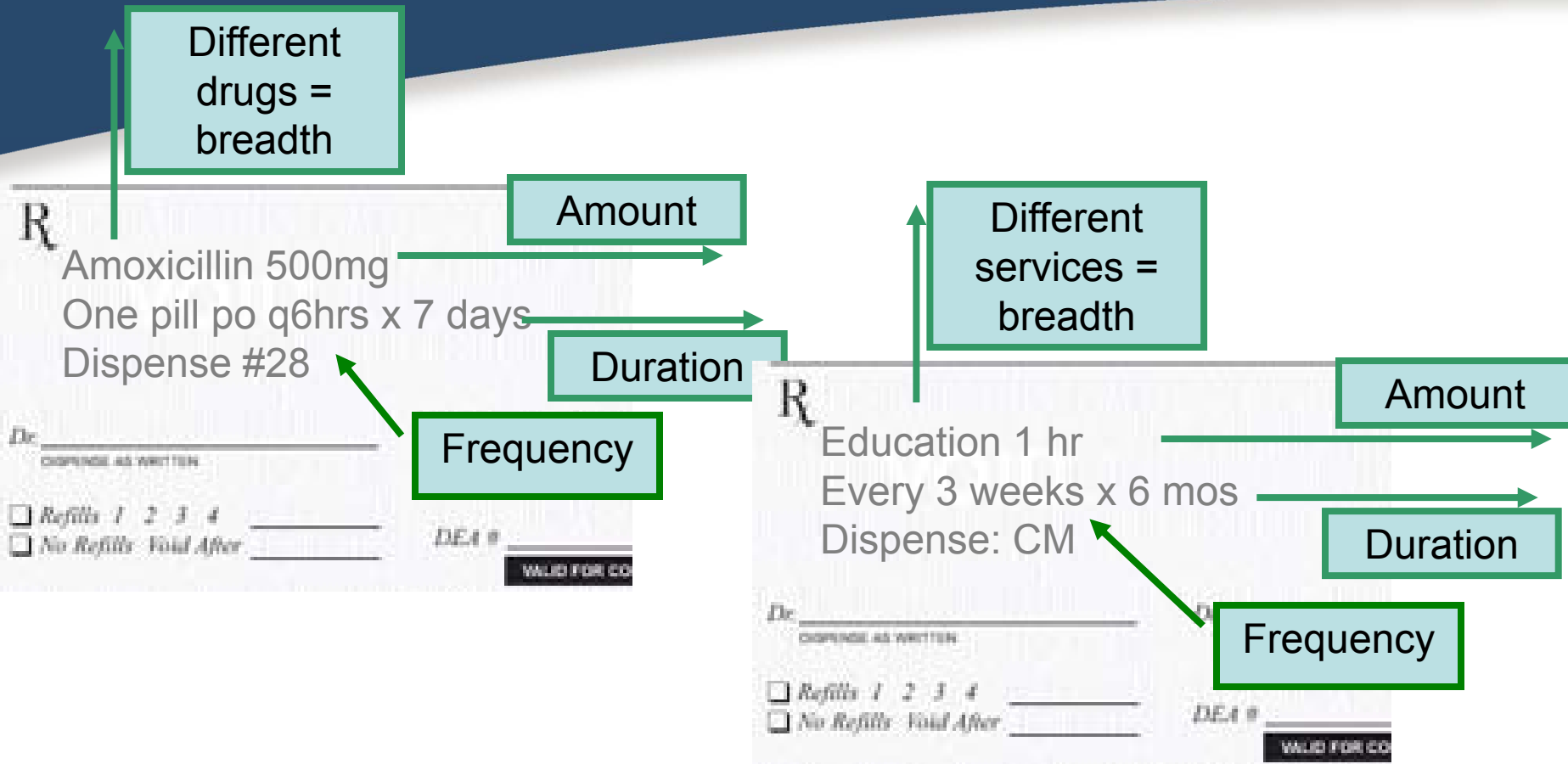
Personal Health Record

If you have questions or concerns,
contact (_____)
at (____) ____ - ____



REMEMBER
to take this Record with you
to all your doctor visits

Components as dosage ...



Components by description for models ...

By program description

By what a patient actually receives ('dosage')

Care Coordination	Service category	All patients
Identify & Assess Patient	ALL	22,899
Co-Develop the Care Plan	Following evidence-based protocols	12,955 (56.6%)
Communicate with All Relevant Participants	General education	6,808 (29.7%)
Monitor and Adjust	Communication	6,789 (29.7%)
Evaluate Health Outcomes	Motivating patients	6,243 (27.3%)
	Social issues / barriers	8,221 (35.9%)

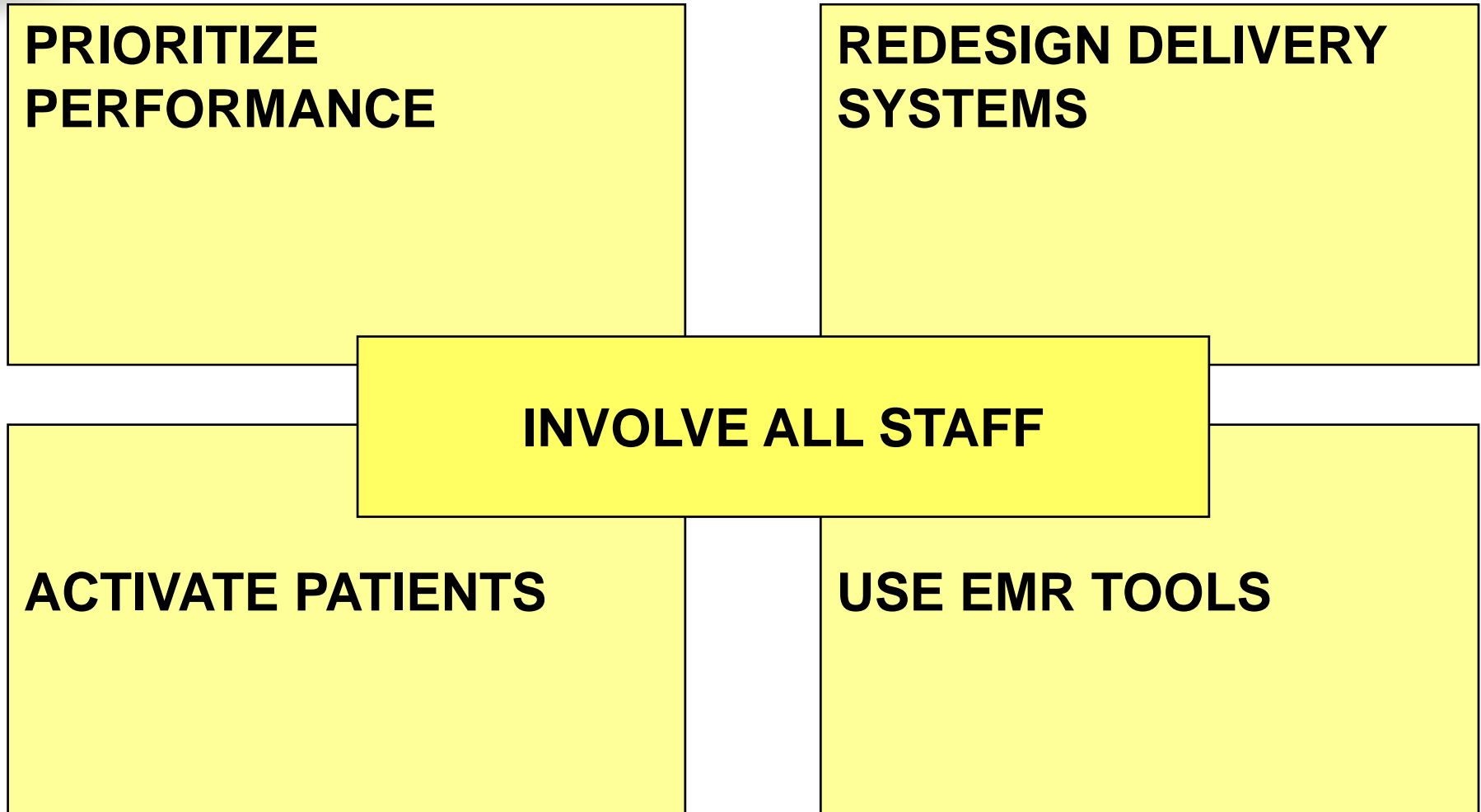
Implementation ...

- Change is hard and inertia is strong...
- Catalysts to change:
 - Direct improvement (we studied *efficiency* and *satisfaction*)
 - Sense of need / urgency
 - Culture that supports / demands change

How do we study implementations?

- First, **why** and **how** do we implement?
- Study measures and design are related to goals and process steps.
 - PPRNet - Translating Research into Practice defines *components of implementation*.
 - CMP (and the CCM) measures readiness.
 - Care Transitions defines *pillars*.
- The RE-AIM framework helps us consider the multi-axial issues around implementation.

PPRNet Translational Research Model



Review of Readiness Assessment

Reimbursement
Efficiency
Bureau of primary
health care
measures upcoming
Investment

Sites Example

Providers
5 PCP / 1 internist
4 midlevel
cardio, ENT, ortho, urology

Care Manager

Population seen: 15% Medicare, 30% Medicaid
50% with Social Needs/Barriers

Redesign experience: Coordination of Care, Chronic
Care, Diabetes, Self-Management. Chronic pain,
tobacco cessation, depression

Information Technology

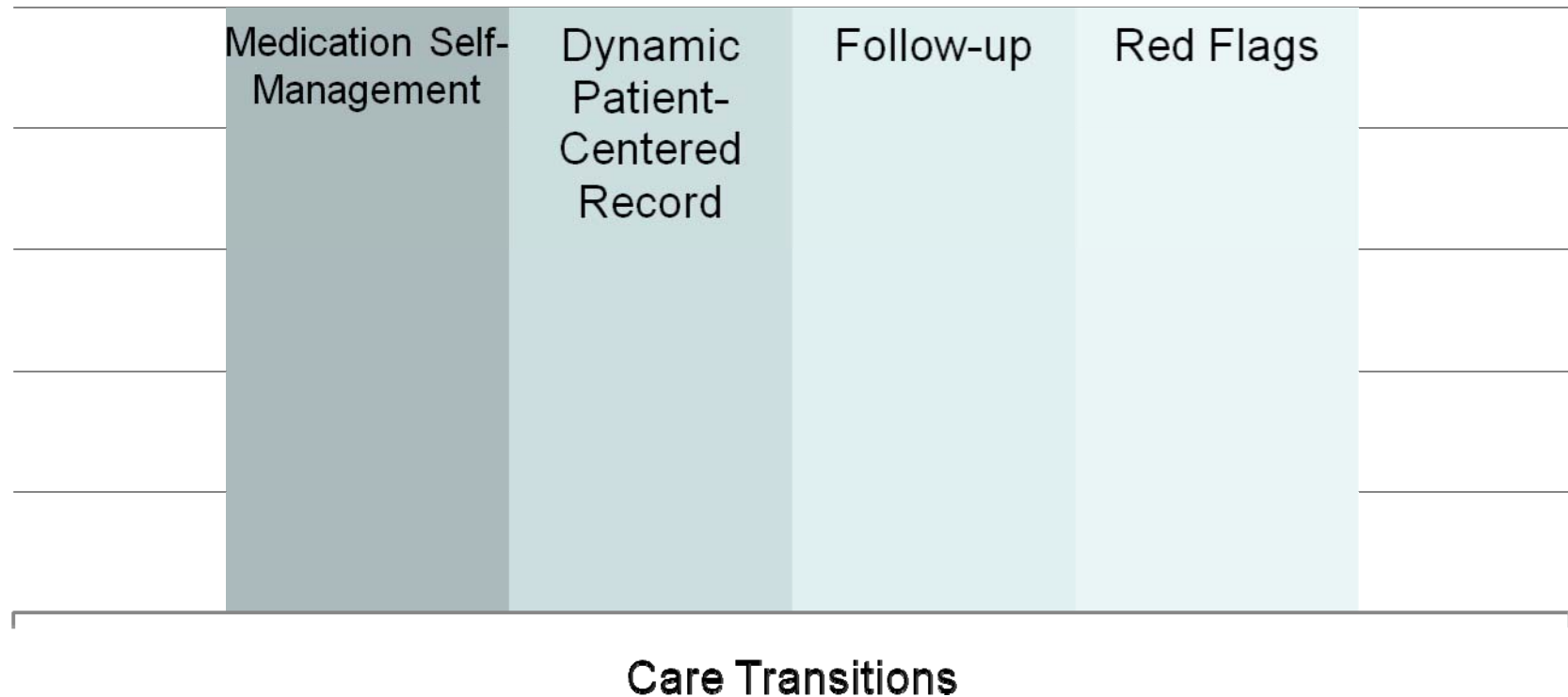
Epic

CVDEMS: disease registry

Reminders / alerts around chronic illnesses

Audit and Feedback?

Pillars can help define implementation success.



RE-AIM Dimensions

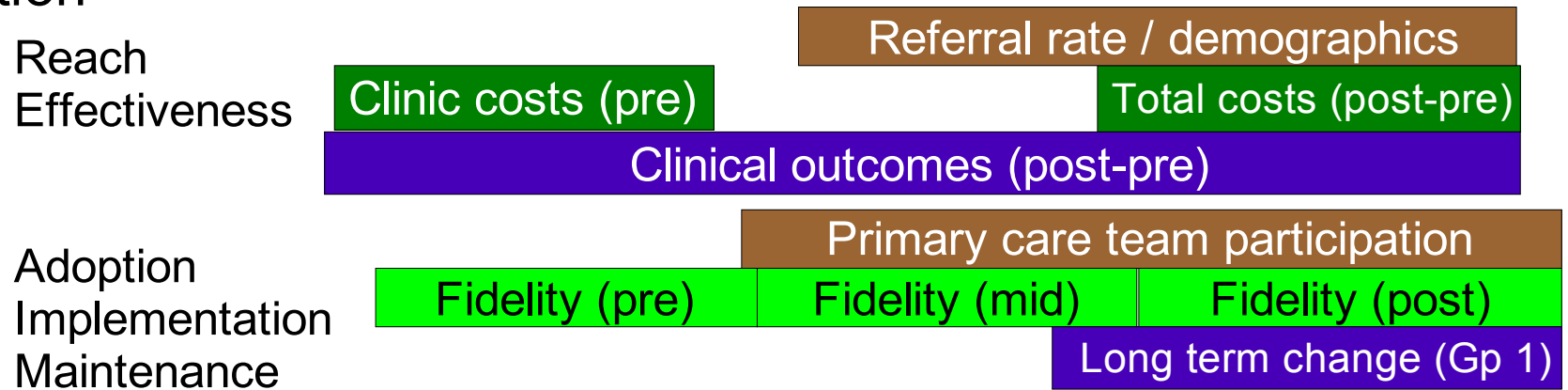
	Dimension	Definitions
Individual Level	<u>REACH</u>	<ol style="list-style-type: none">1. Participation rate among potential target group(s)2. Representativeness of participants in terms of social, demographic, and health characteristics
	<u>EFFICACY/</u> EFFECTIVENESS	<ol style="list-style-type: none">1. Effects of intervention on primary outcome of interest2. Impact on quality of life and negative outcomes3. Robust outcomes (similar effects among targeted groups)

RE-AIM Dimensions (cont.)

	Dimension	Definitions
Setting Level	<u>A</u> DOPTION	<ol style="list-style-type: none"> 1. Participation rate among possible settings and contexts 2. Representativeness of participating settings, intervention staff
	<u>I</u> MPLEMENTATION	<ol style="list-style-type: none"> 1. Extent intervention was delivered as intended in protocol 2. Time & cost of intervention
Both	<u>M</u> AINTENANCE	<ol style="list-style-type: none"> 1. Longer-term effects \geq 6 months (Individual) 2. Impact of attrition on outcomes (Individual) 3. Sustained delivery or modifications of intervention (Setting)

Evaluation of implementation (RE-AIM)

Evaluation

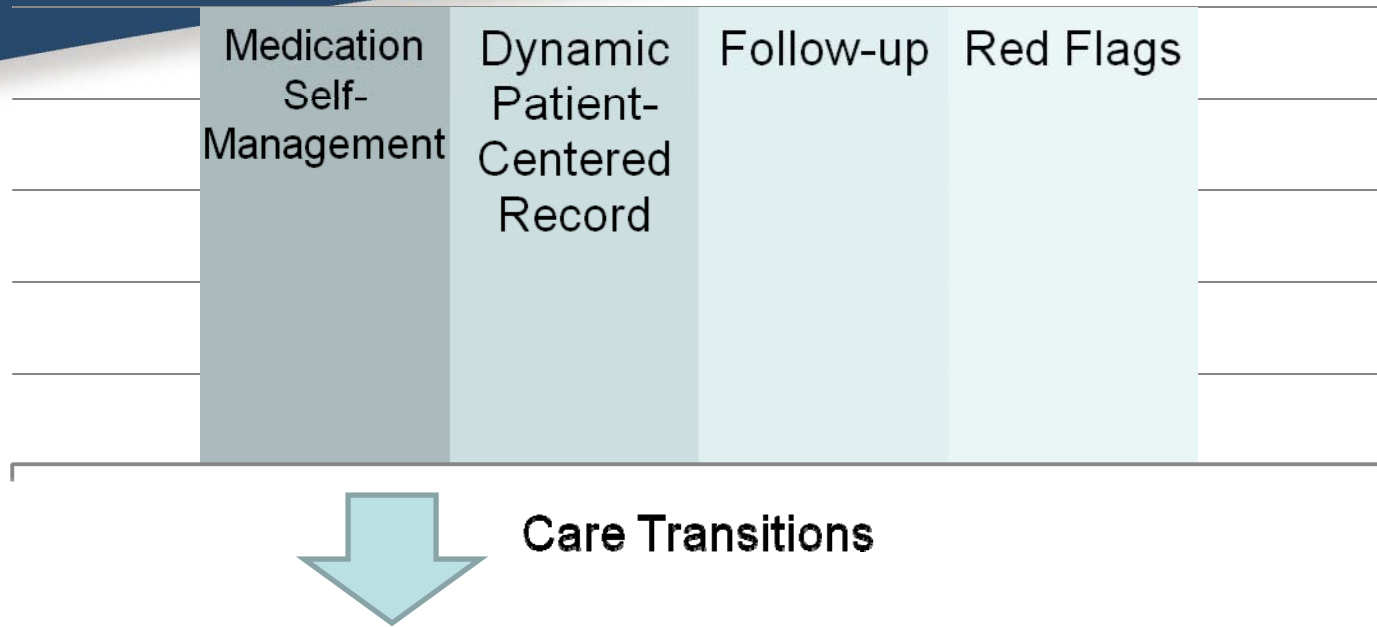


Part of AHRQ funded collaborative with ORPRN

How do we study dissemination?

- No two disseminations are alike.
- *What is important for success?*
- Models may *tie* ‘core competencies’ or ‘pillars’ *to outcomes* for fidelity.
- The *process* of dissemination can be defined.

Pillars can help define success.



The 3-Item Care Transitions Measure (CTM-3)

The first statement is about when you were in the hospital . . .

1. The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital.

The next statement is about when you were preparing to leave the hospital . . .

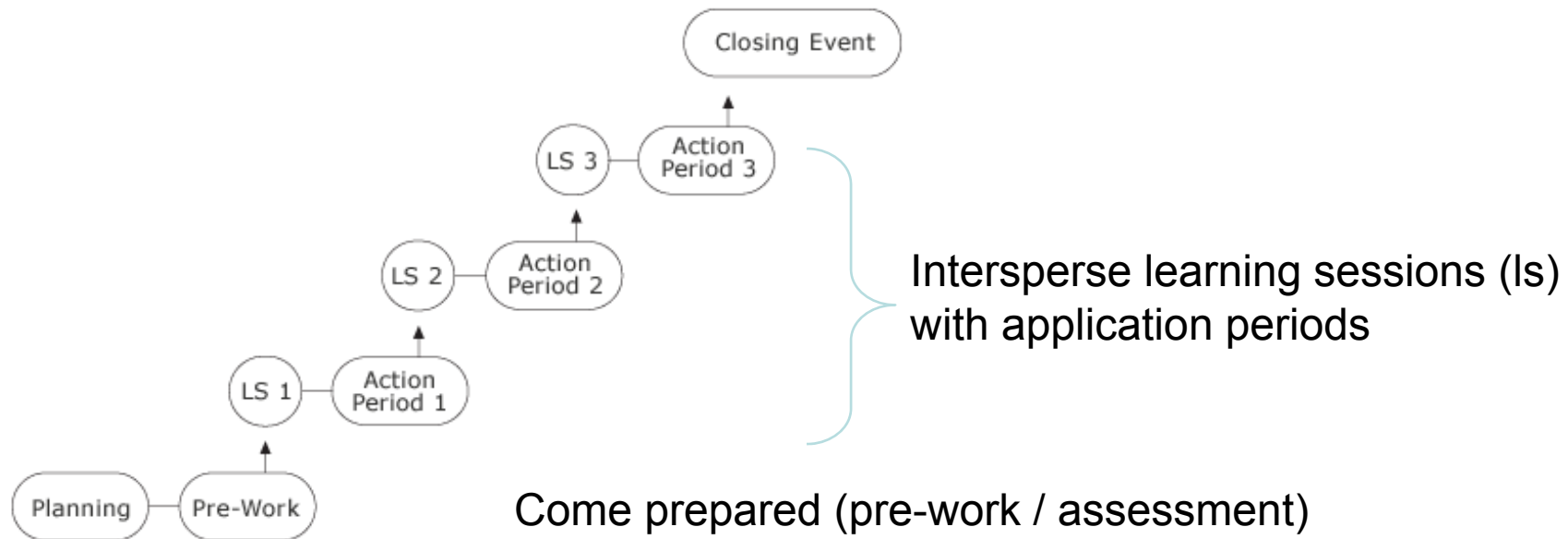
2. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.

The next statement is about your medications...

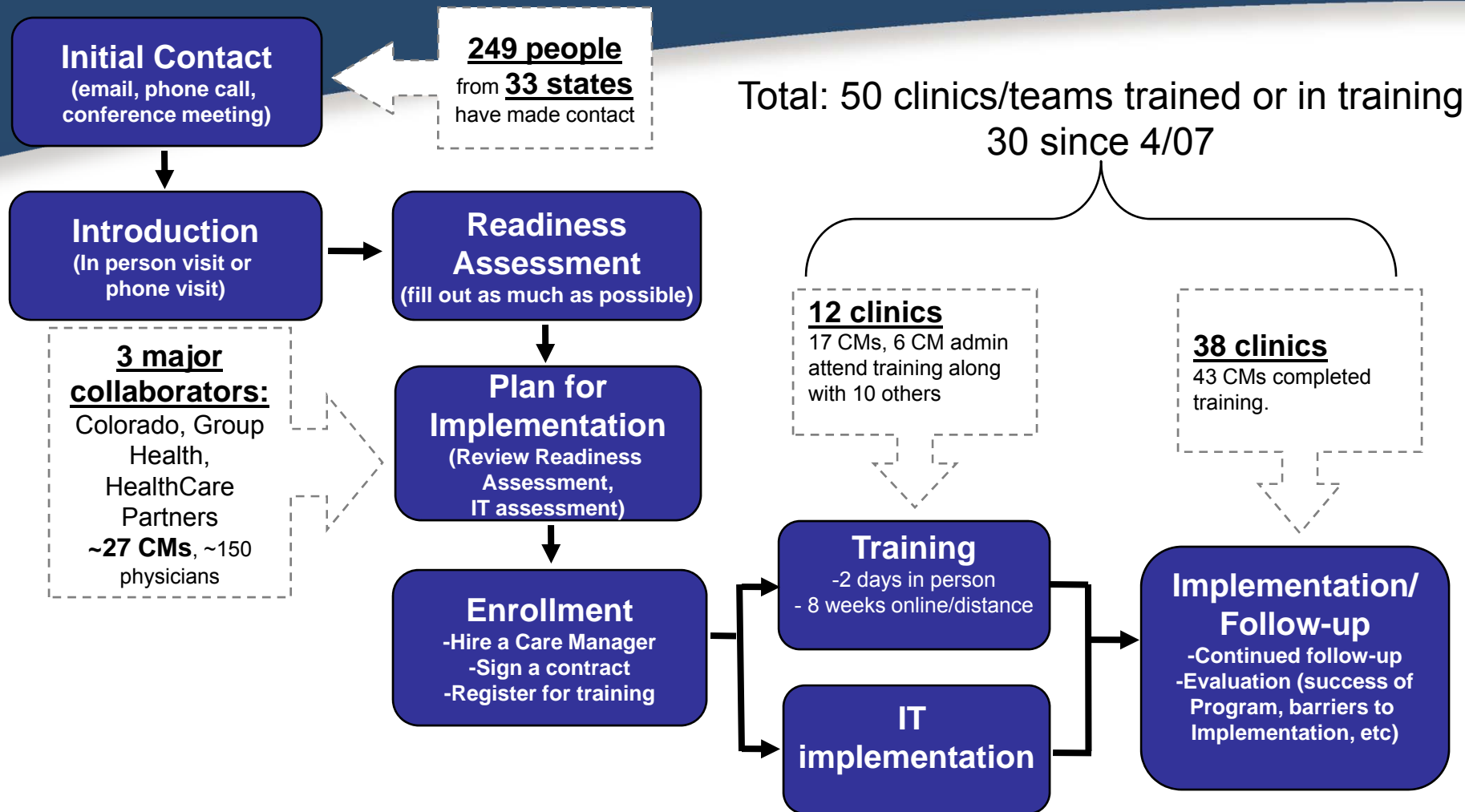
3. When I left the hospital, I clearly understood the purpose for taking each of my medications.

Chronic Care Collaboratives: process

Getting Started



Dissemination of CMP



What is the role of informatics in dissemination?

- Metrics are easier to calculate when IT has predefined standards (NHS).
- IT use can be the glue, the challenge, and the tangible success of the dissemination (CMP).
- The *benefits* and *problems* still need to be measured.

Summary

- Translating research into practice ...
 - Requires change in the system.
 - Benefits from quality improvement and changed models of care
- Implementation ...
 - Can be structured and measured.
- Dissemination
 - Requires careful attention to measures of fidelity, challenges, and success.

Thanks! The Care Management Plus Team

- OHSU

- David Dorr, MD, MS
- K. John McConnell, PhD
- Kelli Radican
- Hanh Tran
- Rachel Burdon
- Nima Behkami

- Intermountain Healthcare

- Cherie Brunker, MD

Advisory board

- Tom Bodenheimer
- Steve Counsell
- Eric Coleman
- Cheryl Schraeder
- Heather Young

Informatics

- Adam Wilcox, PhD

Chronic care model: results from collaboratives

