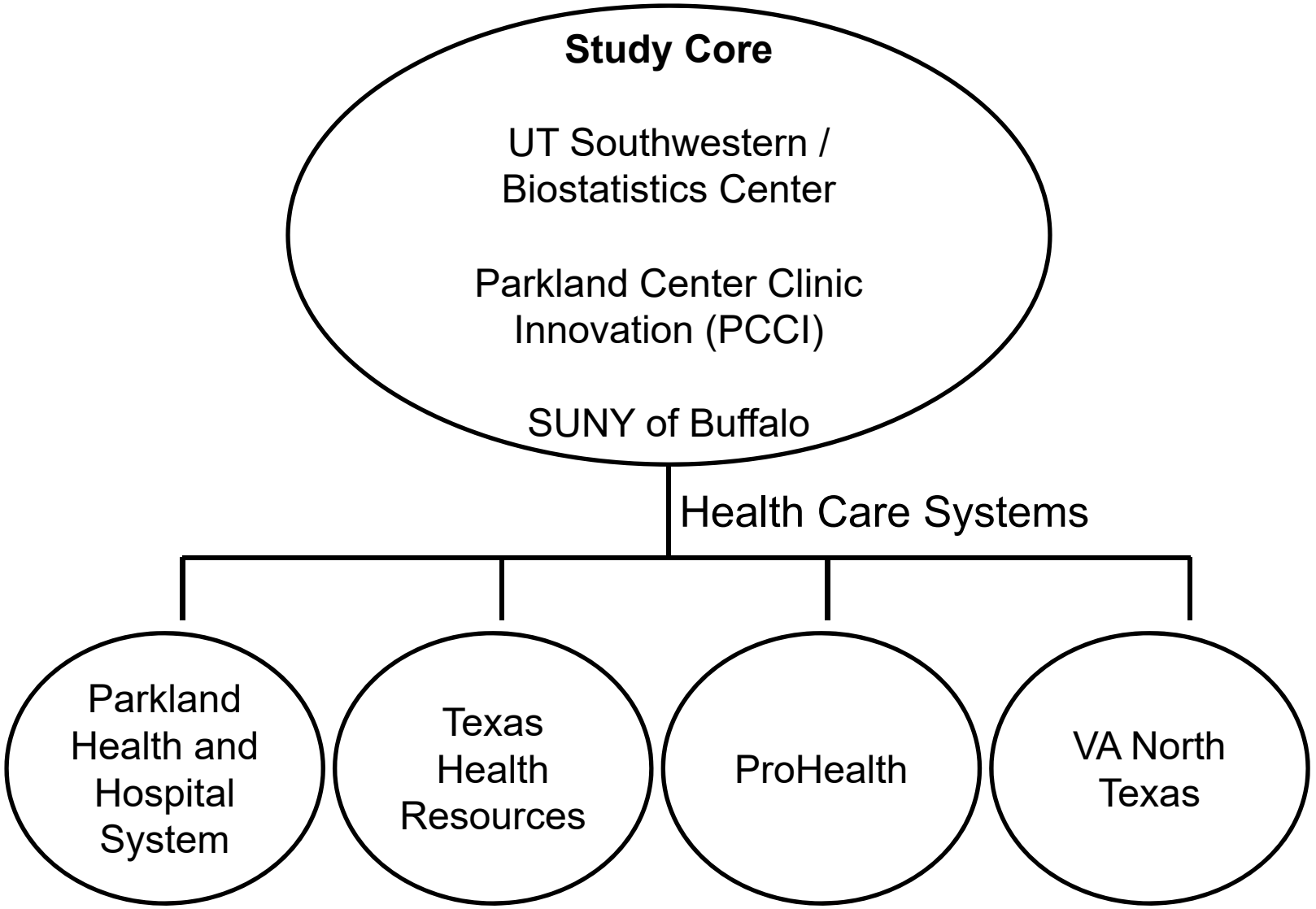
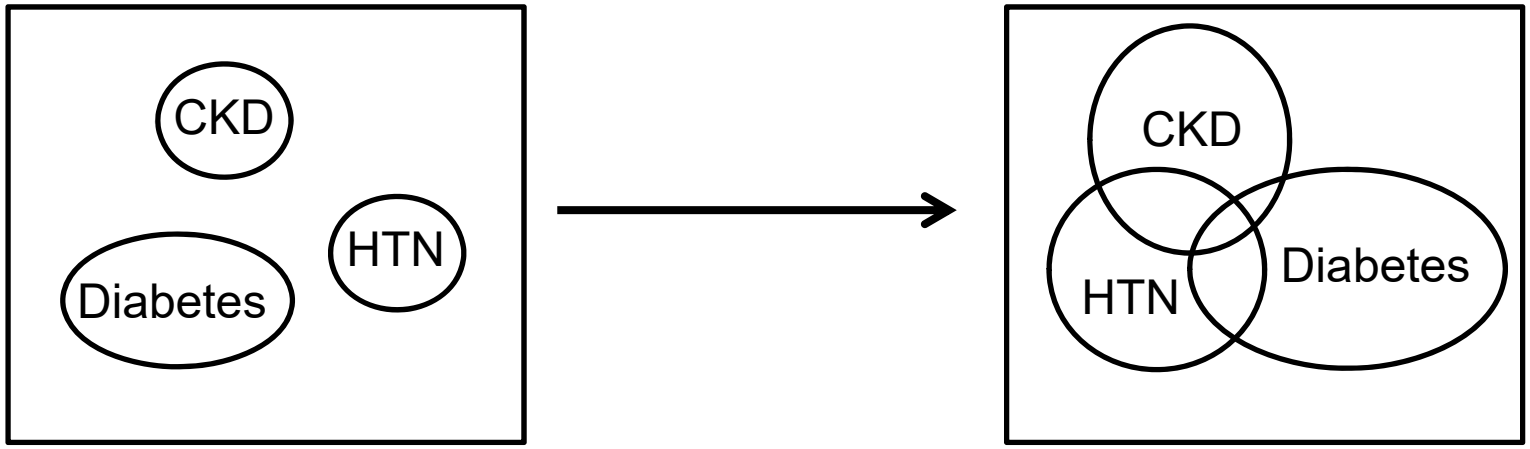
Improving Chronic Disease Management with Pieces

A Pragmatic Trial to Improve Care of Patients with Chronic Kidney Disease, Diabetes and Hypertension

ICD - Pieces™


Study Core
UT Southwestern / Biostatistics Center
Parkland Center Clinic Innovation (PCCI)
SUNY of Buffalo
Health Care Systems
Parkland Health and Hospital System
Texas Health Resources
ProHealth
VA North Texas

Triad of CKD, Diabetes & Hypertension



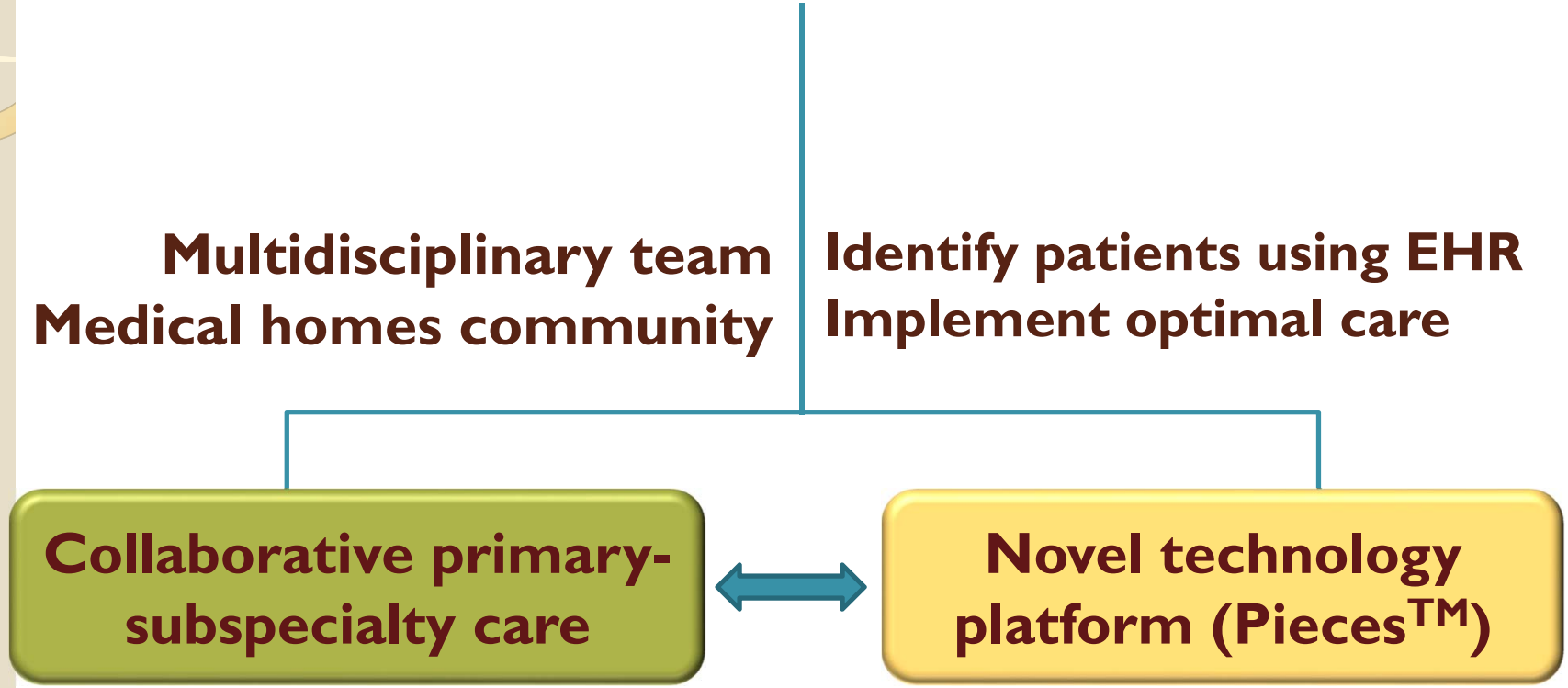
Public health implications
Progression to ESRD
Excessive CV morbidity/mortality
Vulnerable populations
Gaps clinical practice

High Risk

Excess Risk

(larger excess mortality than sum each risk)

Experience with CKD at Parkland



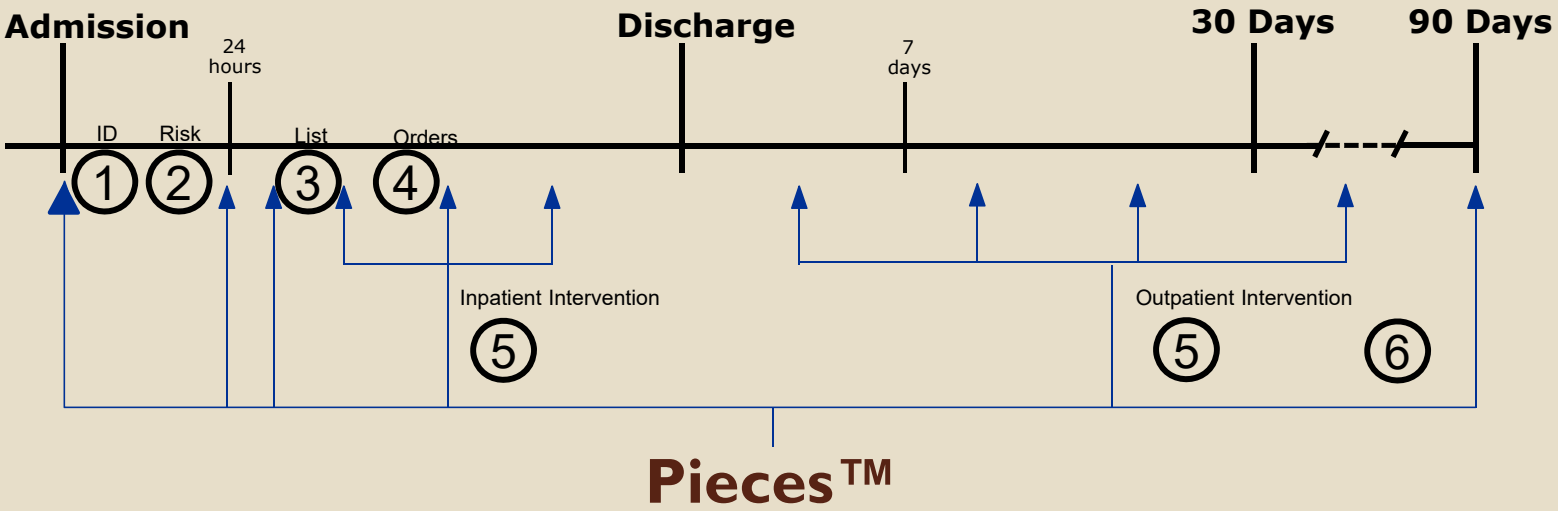
What is Pieces™?

Parkland Intelligent e-Coordination and Evaluation System

Pieces™

- Parkland Intelligent e-Coordination and Evaluation System
  - Sits on top of EHR/EPIC
  - Natural language processing to read EHR
  - Near real-time risk stratification
  - Automated protocol activation
  - Patient-tailored interventions
  - Electronic ascertainment of outcomes

Pieces™
TCU CHF Readmission Reduction



1. Identification of HF patients in Real-Time Using NLP Processing and Data Mining
2. System ranks HF Patients into Risk Categories for readmission
3. System provides list of targeted high risk patients to intervention coordination teams
4. Intervention teams orders inpatient and outpatient interventions in EHR
5. Intervention teams conduct inpatient and outpatient interventions
6. Monitoring and evaluation of Heart Failure patient outcomes

BMJ Quality & Safety
The international journal of healthcare improvement

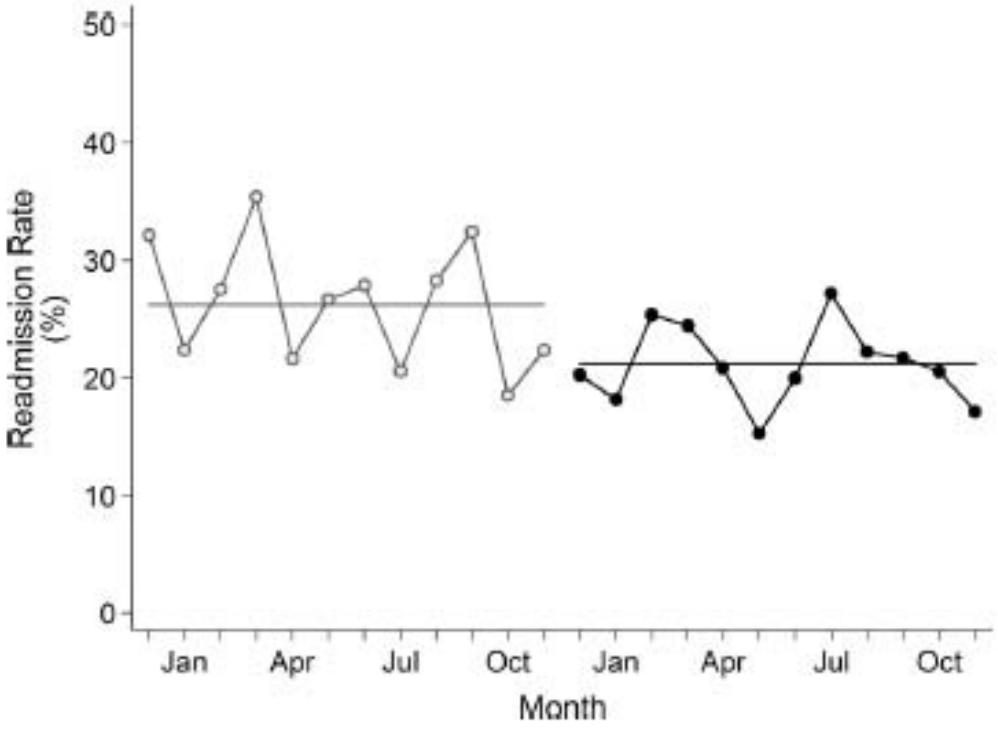
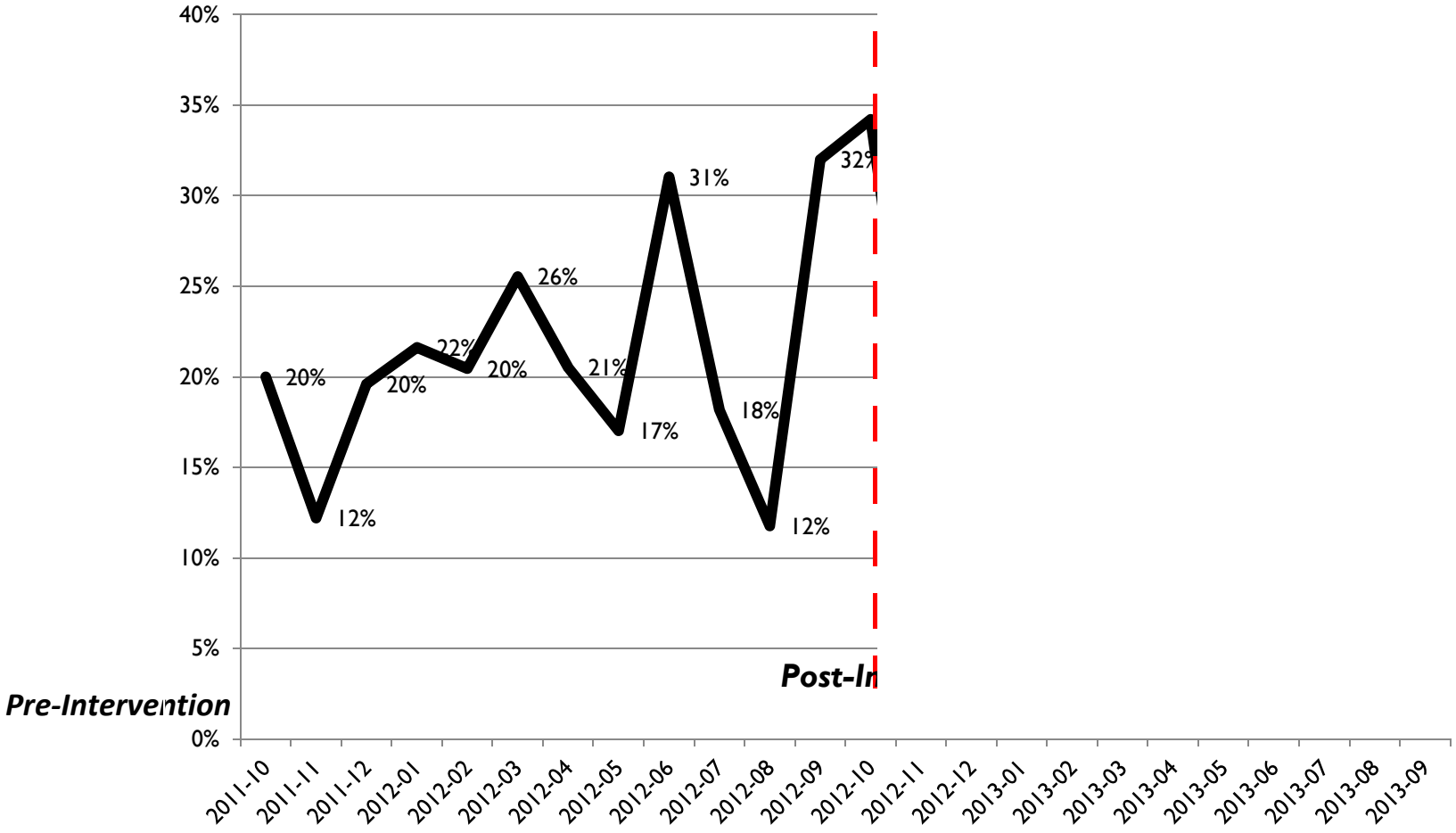


Figure 2 Thirty-day readmission rates by month.

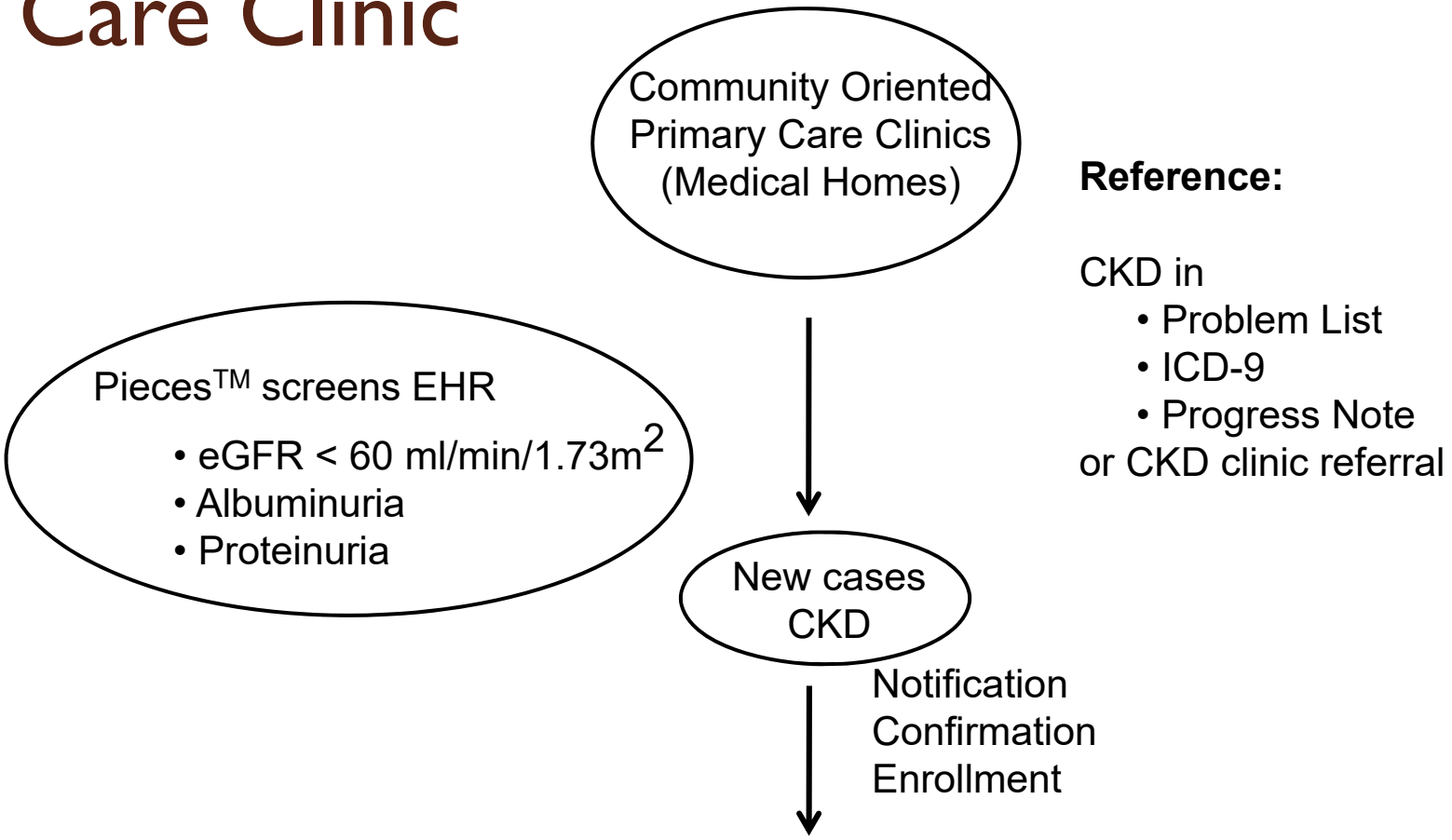
Amarasingham R, *et al. BMJ Qual Saf* 2013;**0**:1–8. doi:10.1136/bmjqs-2013-001901

- Concentrated care management efforts on ¼ of the patients
- 26% relative reduction in odds of readmission
- Absolute reduction of 5 readmissions per 100 index admissions

Texas Health Resources HEB Readmission Rates

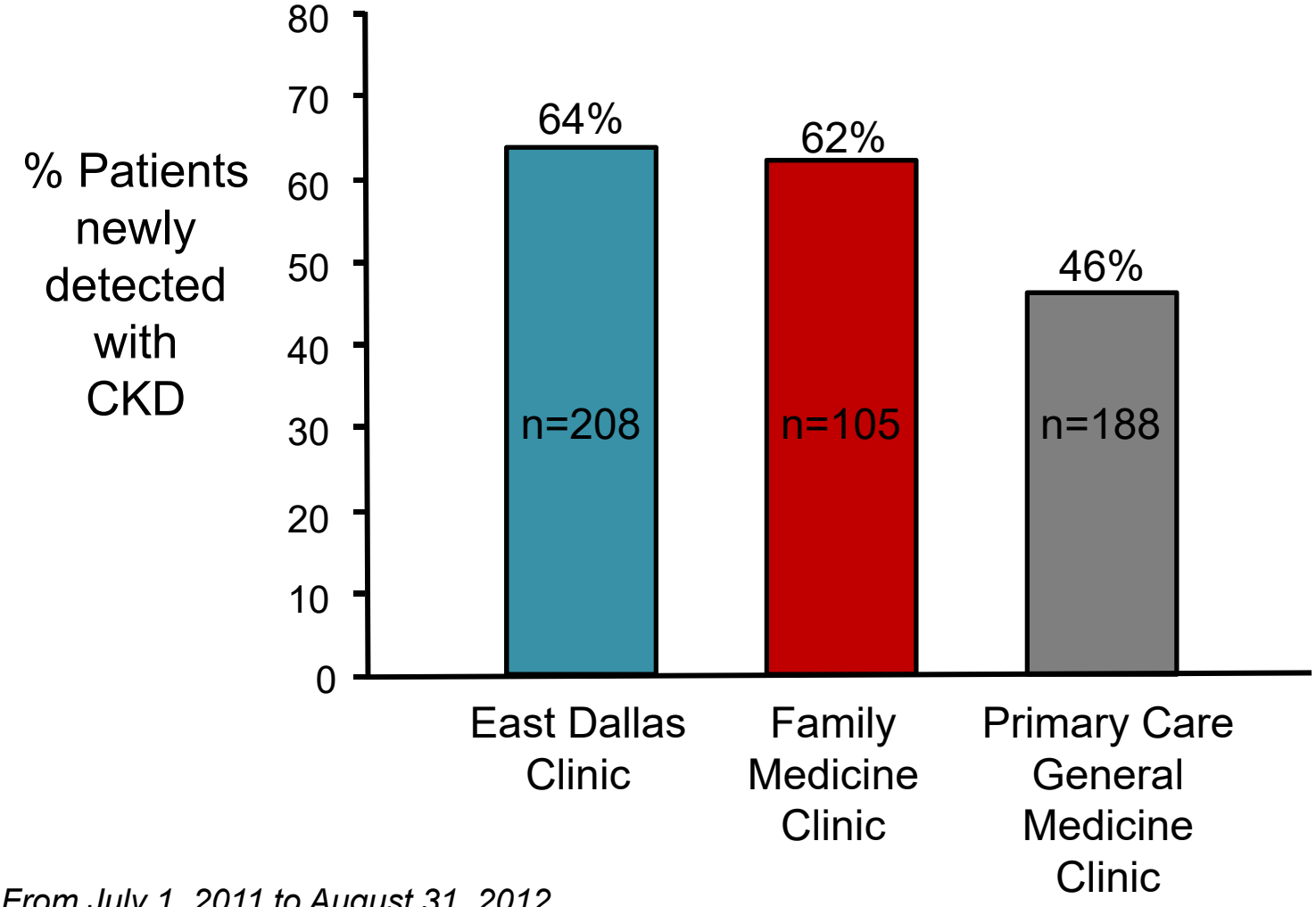


Detection of CKD in a Primary Care Clinic



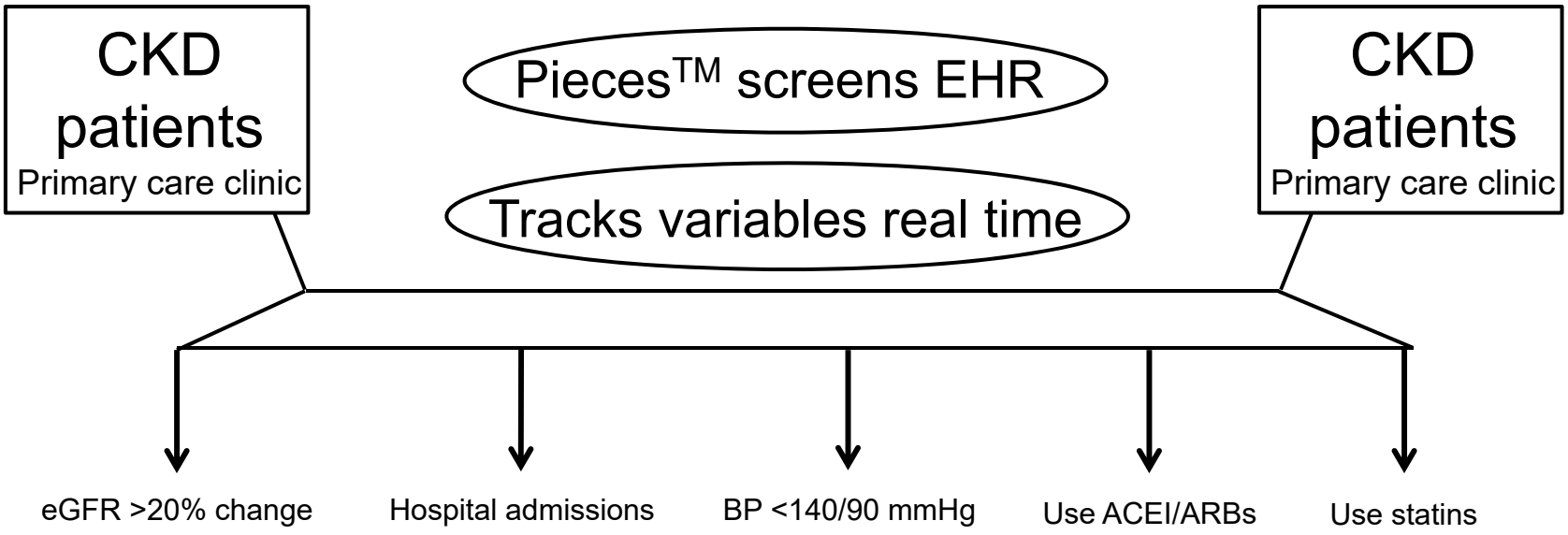
Primary outcome: Number of patients ***newly*** detected with CKD

Undercoding: Patients Newly Detected with CKD by Pieces™



From July 1, 2011 to August 31, 2012

Treatment of CKD and Associated Conditions by Pieces™



Updates electronic dashboard

Notification investigators/clinicians

Achievement Goals CKD Pieces Study

Clinical Measurement	Screening % at Goal	Last follow-up visit % at Goal	
	n=107	n=107	P-value (McNemar's test)
Follow-up duration, month median [range]		11.2 [0.2 - 21.5]	
Systolic blood pressure	34.6%	43.0%	0.14
Diastolic blood pressure	57.9%	65.4%	0.17
ACEI/ARB	57.0%	86.9%	<0.0001
Statin	43.9%	79.4%	<0.0001

if positive test for proteinuria or albuminuria, then goal BP <130/80; Otherwise goal BP < 140/90).

Improving Chronic Disease Management with Pieces™: A Collaboration of Multiple and Diverse Healthcare Systems

Hypothesis

- **Patients who receive care with a collaborative model of primary-subspecialty care enhanced by novel information technology (Pieces) will have fewer hospitalizations, readmissions, CV events and deaths than patients receiving standard medical care.**

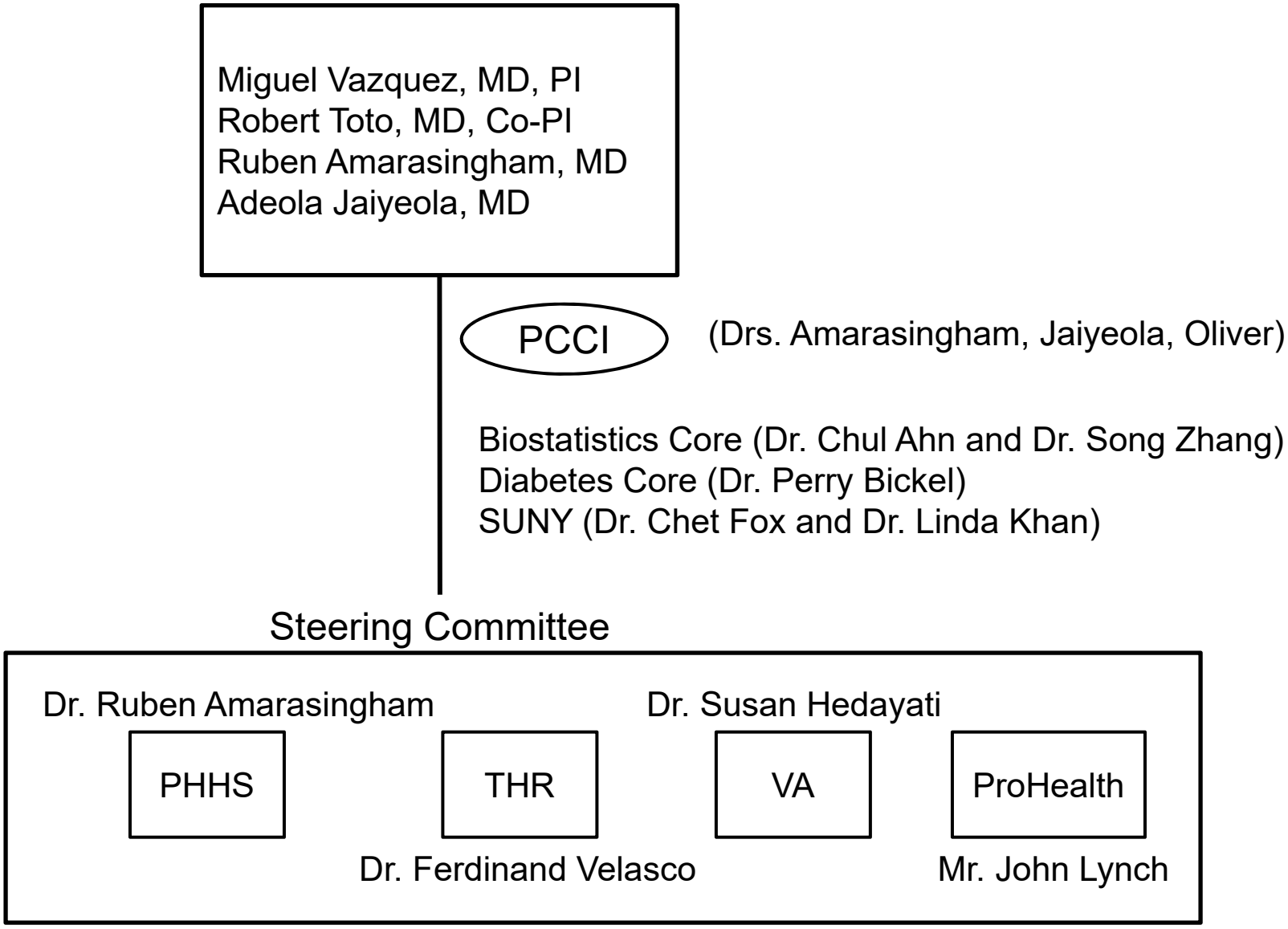
Specific Aim UH2

- **Establish a Health Care Systems Collaboratory to conduct a pragmatic trial to improve care of patients with three chronic coexistent medical conditions: CKD, diabetes and hypertension.**

Diverse Participatory Healthcare Systems and EHRs

HCS	Description	Location	EHR
Parkland	Safety-net public	Dallas County	EPIC
Texas Health Resources	Private non-profit	North Texas	EPIC/All Scripts
ProHealth	Private non-profit	Connecticut	All Scripts
VA North Texas	Federal	North Texas	CPRS

Organization ICD - Pieces™



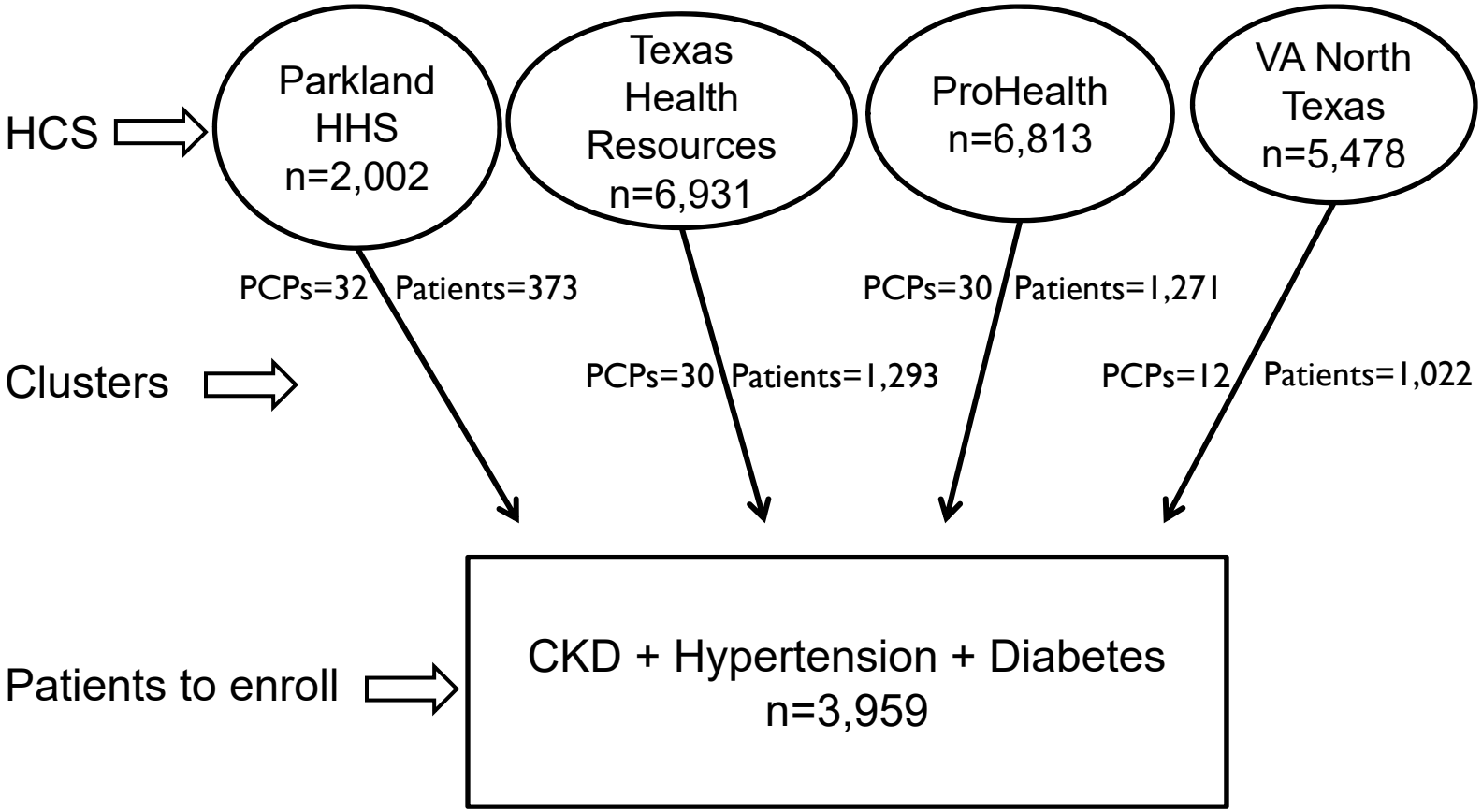
Specific Aim 1 UH3

- **Conduct a randomized pragmatic clinical trial of management of patients with CKD, diabetes and hypertension with a clinician support model enhanced by technology support (Pieces) compared with standard of care.**

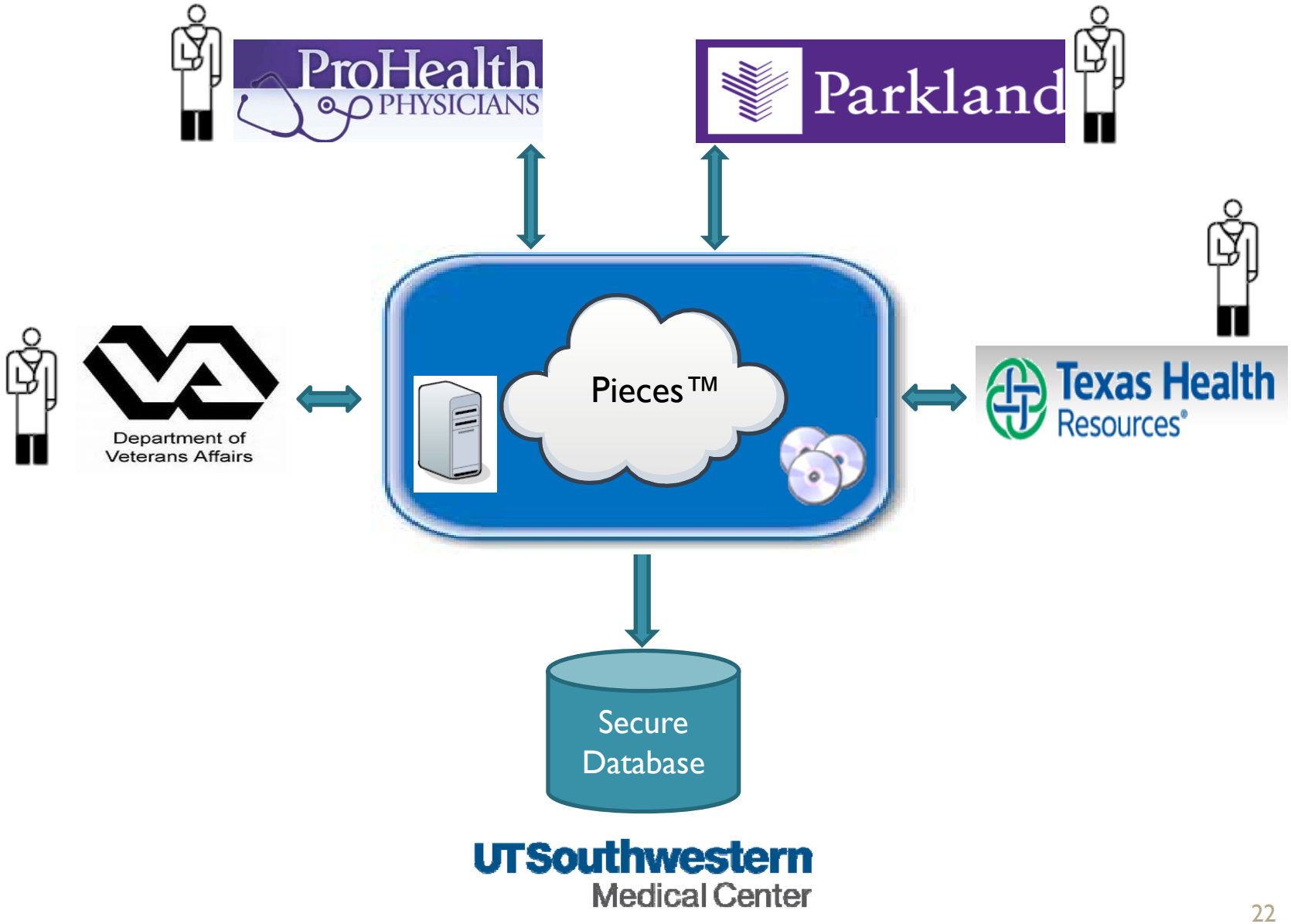
Specific Aim 2 UH3

- **Develop and validate predictive models for risks of hospitalizations, cardiovascular events and deaths for all patients with coexistent CKD, diabetes and hypertension and to predict risk of 30 day readmissions for patients who are hospitalized.**

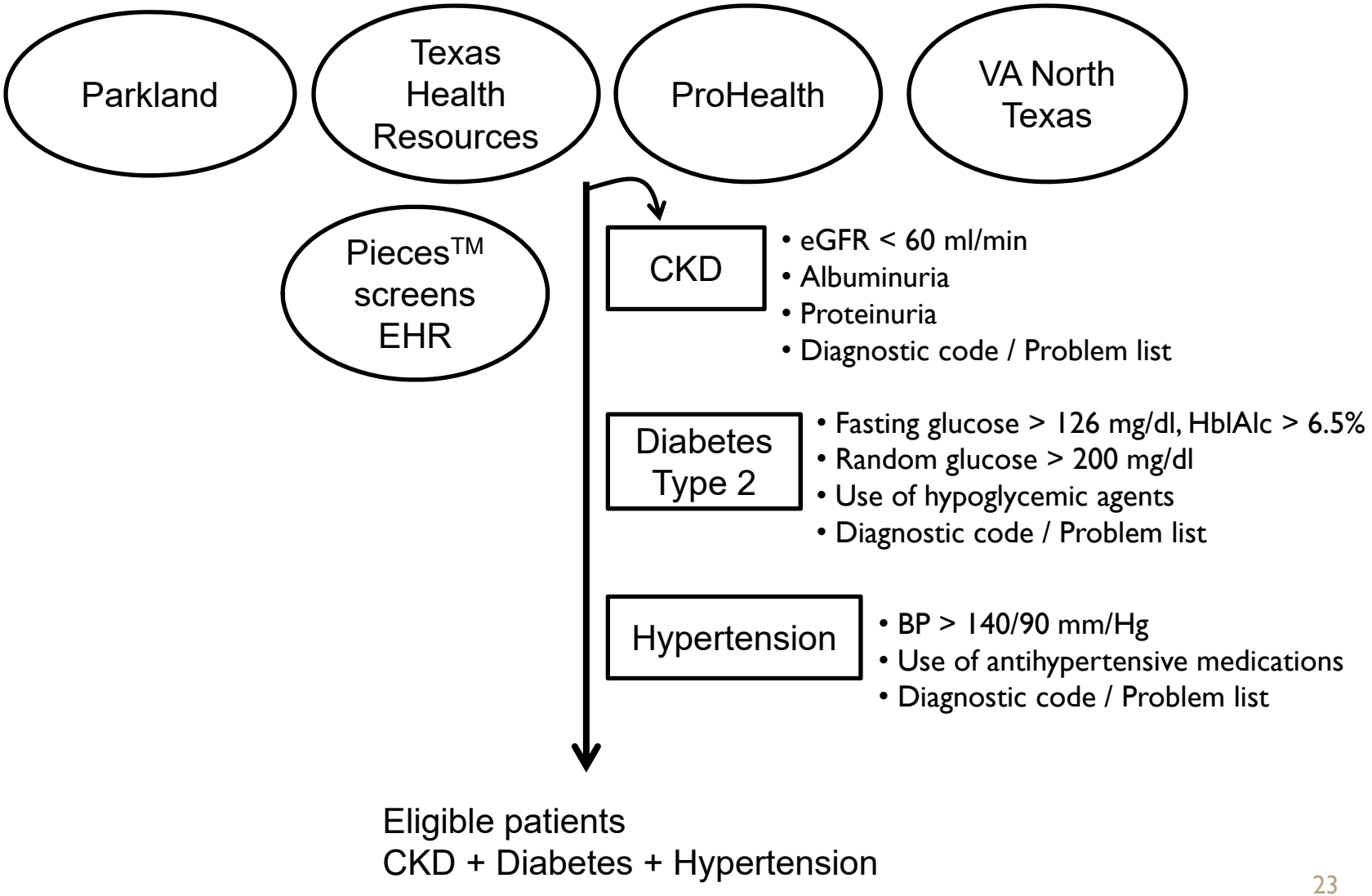
Pieces™ Identifies Patients with CKD and Diabetes and Hypertension



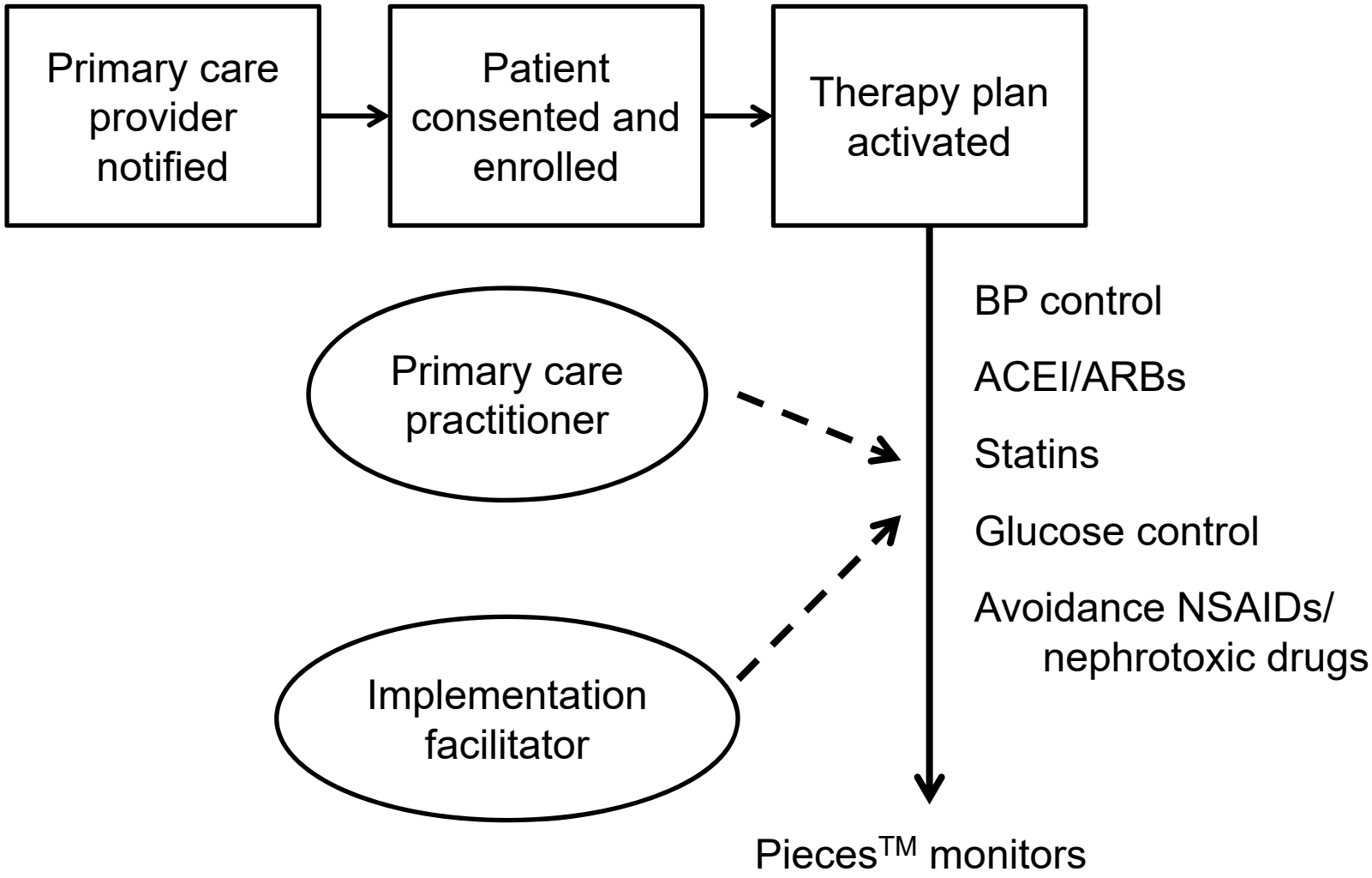
Pieces ™ Connects with Implementation Sites



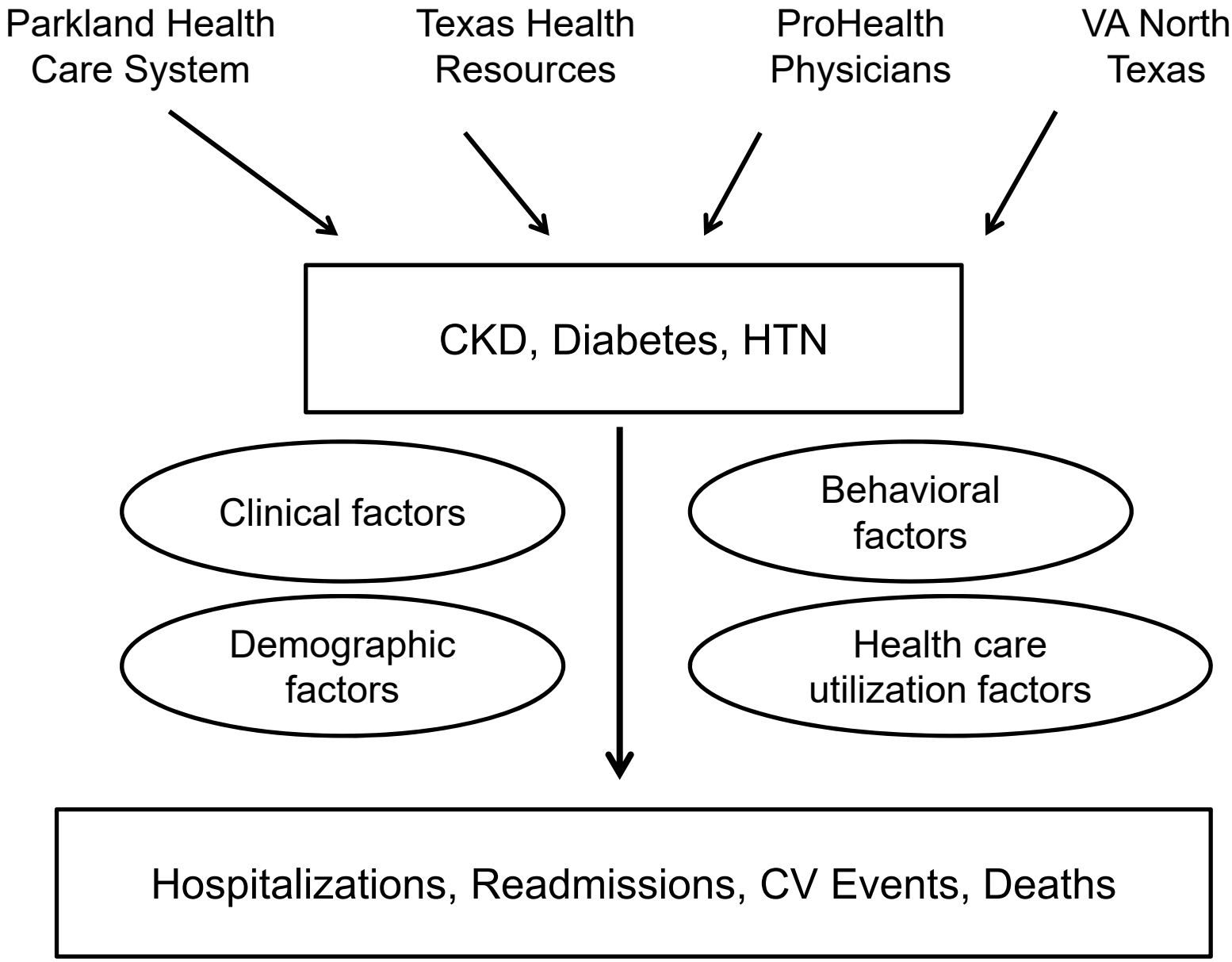
Detection CKD, Diabetes and Hypertension



CKD, Diabetes and Hypertension Enhanced by Pieces™



Predictive Risk Model



Improving Chronic Disease Management with Pieces

- Important public health problem
- Collaboration 4 large health care systems
  - Socieconomic and ethnic diversity
  - Diverse geographic distribution
  - Different EHR
- Novel technology platform
- Prior experience with chronic conditions
- Potential for application to other diseases