Continuity of Care: Tracking Patients Across Health Plans and Clinical Settings

Basic Information and Some Examples of Applications

Michael Horberg, MD MAS FACP FIDSA
Executive Director Research, Community Benefit, and Medicaid Strategy, Mid-Atlantic Permanente Medical Group
Director HIV/AIDS, Kaiser Permanente
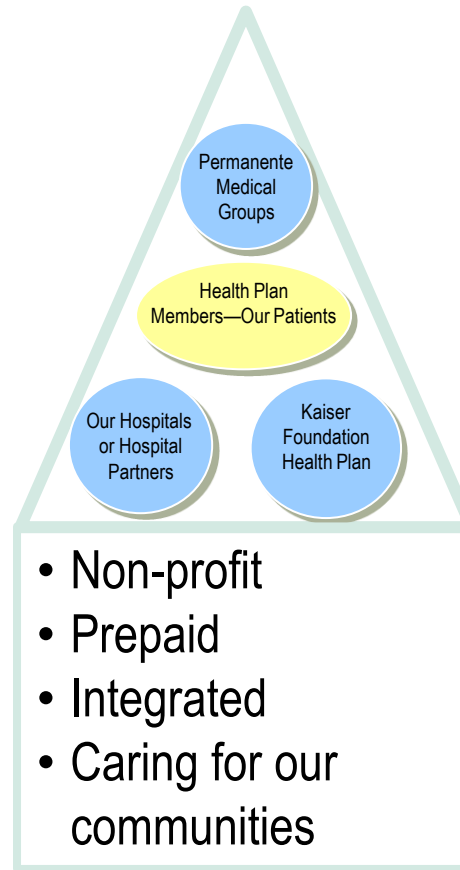
May 9, 2016

KAISER PERMANENTE®

Disclosures

- I am an employee of Kaiser Permanente
  - All opinions expressed are my own
  - But I do think we (KP) do a pretty darn good job at this!
- I will not be discussing any medications during my talk
  - Except to say that most are too expensive and pharma needs to lower their prices!
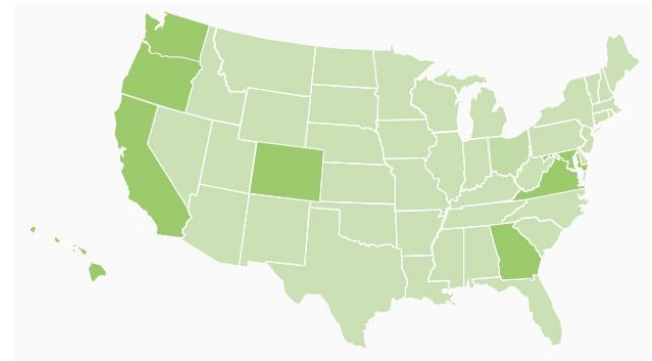- I am not a health informaticist!

Setting the Stage

1. Describe Kaiser Permanente

   a) Nationally

   b) Kaiser Permanente Mid-Atlantic States (where most of my examples come from)

2. Our data systems

   a) The "front end"—what our health care system professionals and patients see

   b) The "back end"—and how we can make it all fit together data-wise

3. How the data systems mesh together

   a) Within KP

   b) With multiple systems

Kaiser Permanente (KP)

- *Our Mission: To provide high-quality, affordable health care services and to improve the health of our members and the communities we serve*

- Integrated delivery system (hospitals, clinicians, pharmacies, lab, x-ray, etc.) and financing

- Operates like a mini-"national health system"
  - Single funding stream with global budget
  - Accountable for total health of a population

Permanente Medical Groups

Health Plan Members—Our Patients

Our Hospitals or Hospital Partners

Kaiser Foundation Health Plan

- Non-profit
- Prepaid
- Integrated
- Caring for our communities

Kaiser Permanente is one of the nation's largest not-for-profit health plans, serving over 10 million members in eight states and the District of Columbia

KP defines the integrated model of health care financing and delivery through its unique partnership among hospitals, health plan, and medical group: *contractual* and *exclusive*
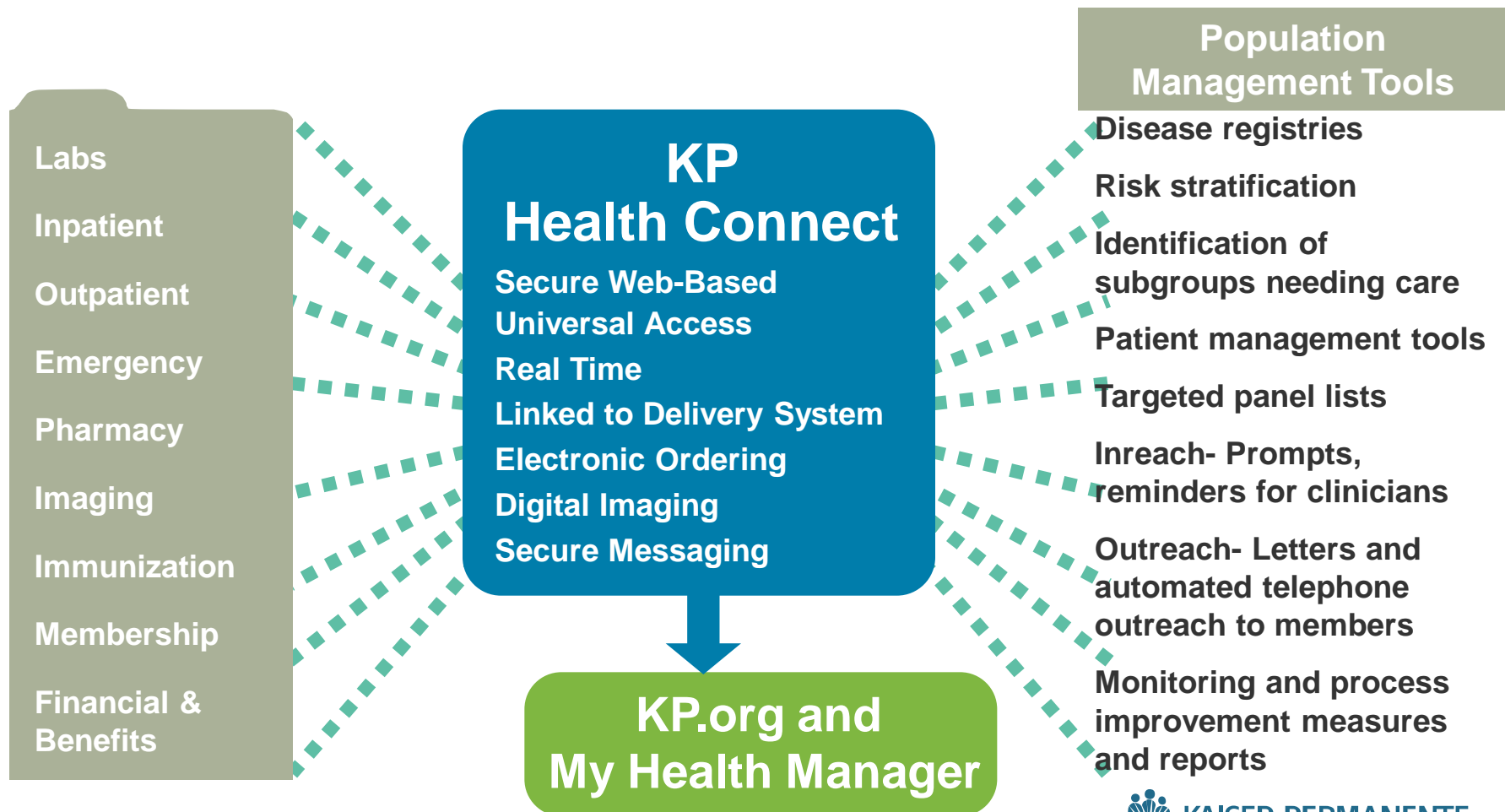
KAISER PERMANENTE®

Fast Facts: KP Mid-Atlantic

- Cover much of Maryland, Washington, DC, and Northern Virginia

- >670,000 members

- Over 1,300 Mid-Atlantic Permanente Medical Group physicians

- About 6,000 employees

- 30+ medical facilities
  - Hub and spoke→ 5 hubs

- Core hospitals at which KPMAS physicians directly care for members

- 24 hours / 7 days / 365 days care available

- Fully supported by Comprehensive electronic health record (EHR)

KAISER PERMANENTE®

The KP Model—Technology Driven

Kaiser Permanente model: Highly coordinated care through state-of-the-art technology and the area's largest multi-specialty physician group practice

Labs

Inpatient

Outpatient

Emergency

Pharmacy

Imaging

Immunization

Membership

Financial & Benefits

KP Health Connect

Secure Web-Based Universal Access
Real Time
Linked to Delivery System
Electronic Ordering
Digital Imaging
Secure Messaging

KP.org and My Health Manager

Population Management Tools

Disease registries

Risk stratification

Identification of subgroups needing care

Patient management tools

Targeted panel lists

Inreach- Prompts, reminders for clinicians

Outreach- Letters and automated telephone outreach to members

Monitoring and process improvement measures and reports

KAISER PERMANENTE®

First Key Concept—The Medical Record Number

- All is based on the patient's Medical Record Number (MRN)

  – Uniquely derived number for each patient

  – Is NOT related to any patient attribute intentionally (i.e., SSN, date of birth, gender, etc.)

  – BUT is considered as group A PHI (same as name, SSN)

  – Requires patients to know this number too!

- However, MRN is not coordinated across KP regions

  – Thus, patients can have multiple MRN

  – MAJOR LIMITATION (especially for linking patients across regions)

  – Further, without SSN, cannot get most death data

  – Or easily link outside of KP

- NOTE: Other systems use SSN, DOB, etc.

  – However, potential disclosure and HIPAA rules

KAISER PERMANENTE®

KP HealthConnect Our EHR—The "front end"

- From any computer with an internet connection, our physicians can view x-rays (or any other radiology image) with the member moments after the film is taken.

- Epic®-based

kp.org—our patient website—also "front end"

- From any computer with an internet connection, Kaiser Permanente members can:

  - Email their Permanente doctor's office
    - Including their doctor
  - Schedule appointments
  - Fill prescriptions
  - View lab test results
  - Print immunization records
  - View own medical record
  - Get their list of medications

- Nationwide, millions of Kaiser Permanente members are using this convenient, time-saving technology.

KAISER PERMANENTE®
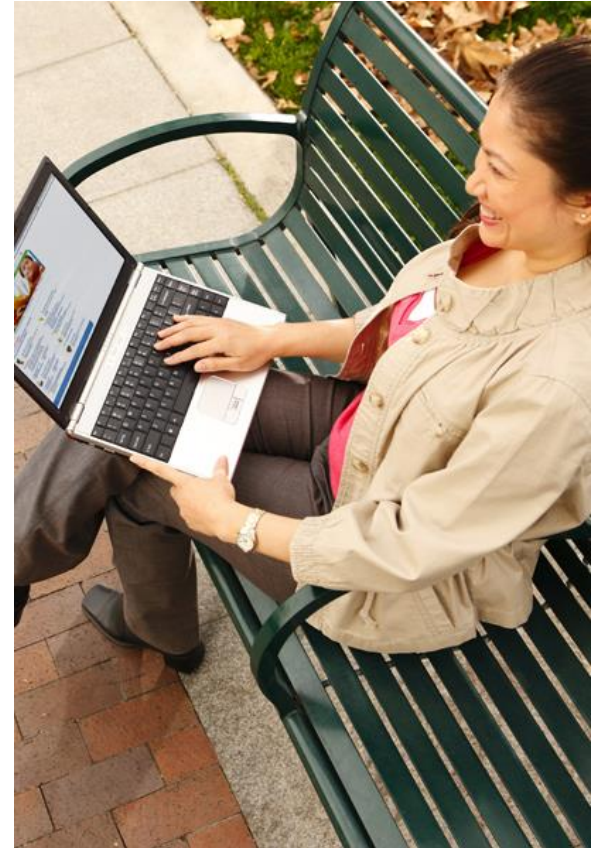
Population Health Built-in: The Front End

Automatic prompts at _every visit in every department_

- **Care Gap Identification**
  - Immediate electronic action / order placement / booking to address
  - Systematized workflows / Smart Sets
- **Document the _Right_ Info**

Medical vitals:
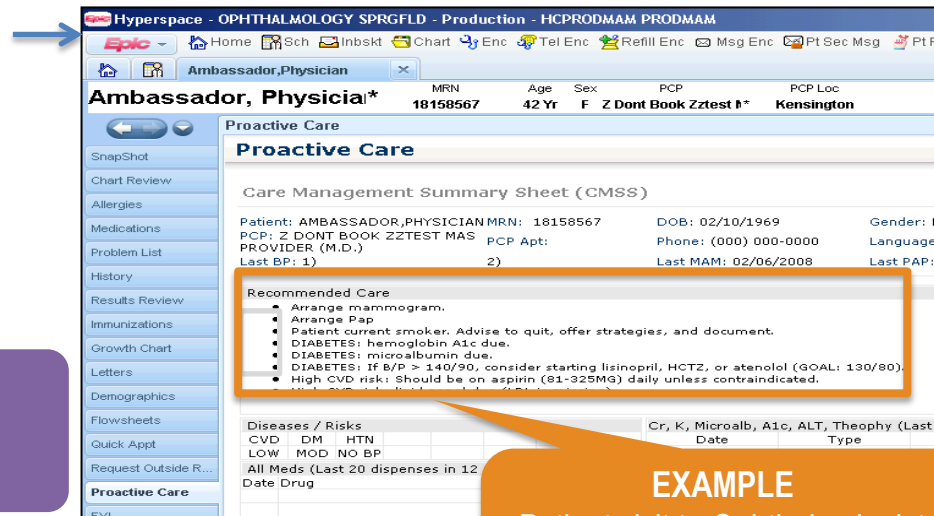- blood pressure
- temperature
- pulse

plus

- BMI
- Smoking
- Exercise
- Alcohol

EXAMPLE
Patient visit to Ophthalmologist can prompt for needed mammogram

We'll Get Back to this…

KAISER PERMANENTE®

Population Health Built-in: The Back End

All members with a chronic condition are automatically "enrolled" in disease management programs.

Population health tools allow us to identify members in need of outreach. The program is owned by the member's primary care team, not a 3rd party.

- **Disease registries**
  - Not opt in or out
  - Algorithms
  - Physician definition
  - Enriched with clinical data, not simply claims

- **Search/Query on demand**
  - Each PCP has access
  - Drive outreach calls, letters, email

- **Robust Health Ed tools**
  - Classes, Coaches, etc.
  - Complete Care Journal

KP HIV Overall Program Strategy:
...as a learning organization

Multidisciplinary care team model

Generating QI programs from recognized gaps

Research

Practice Improvement

Policy

Provider Education

Shared electronic health record and HIV registry for panel management

Testing guidelines and interregional care guidelines
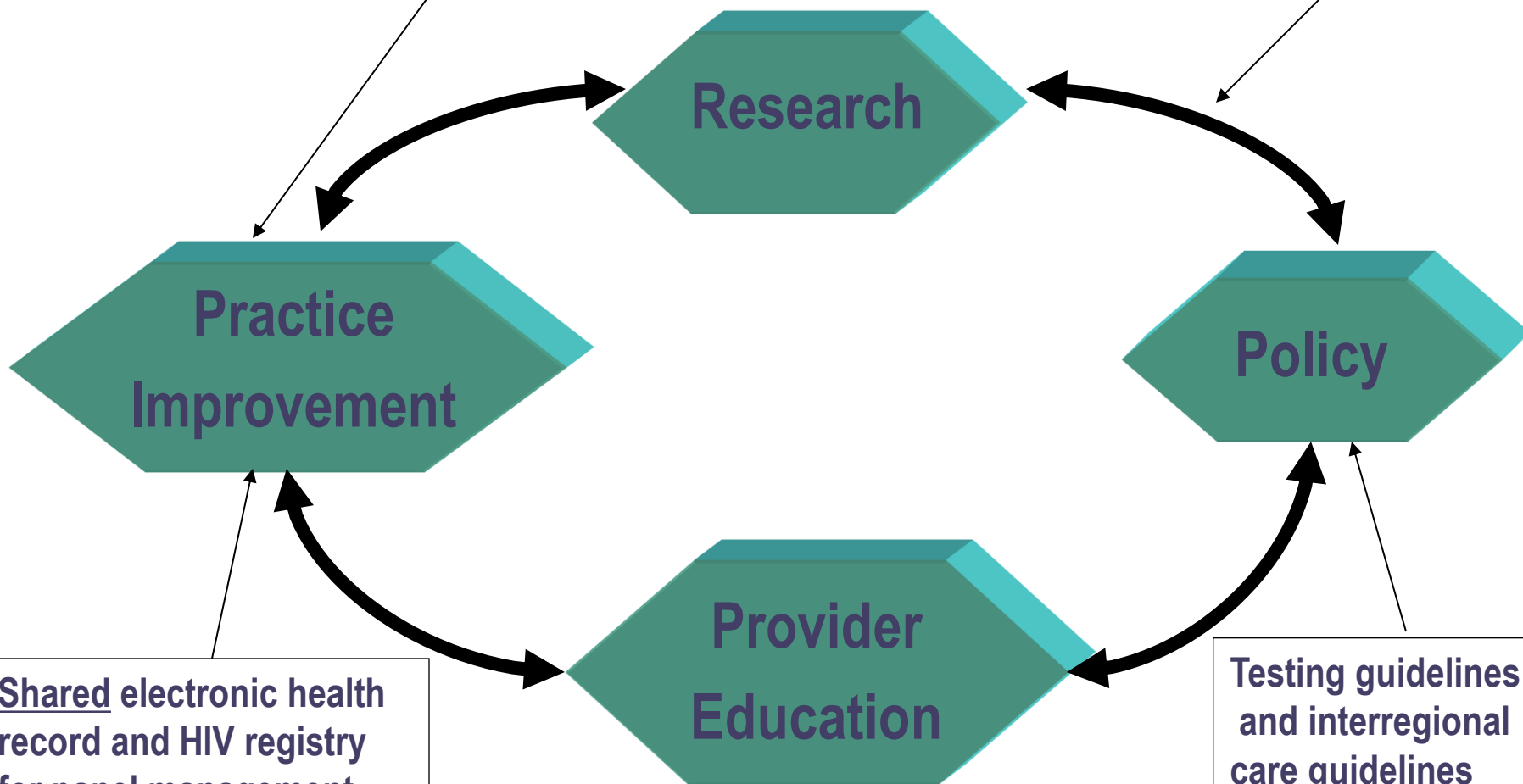
So, Data Coordination is Key

- Demonstrate "garbage in, garbage out.

- Data Management is Complex

- No such thing as a simple data request.

- Data is time consuming, and requires expertise.
  - Administrators don't get this…

KAISER PERMANENTE®

Why Even Simple Data Requests are Complex
But all is coordinated via the MRN
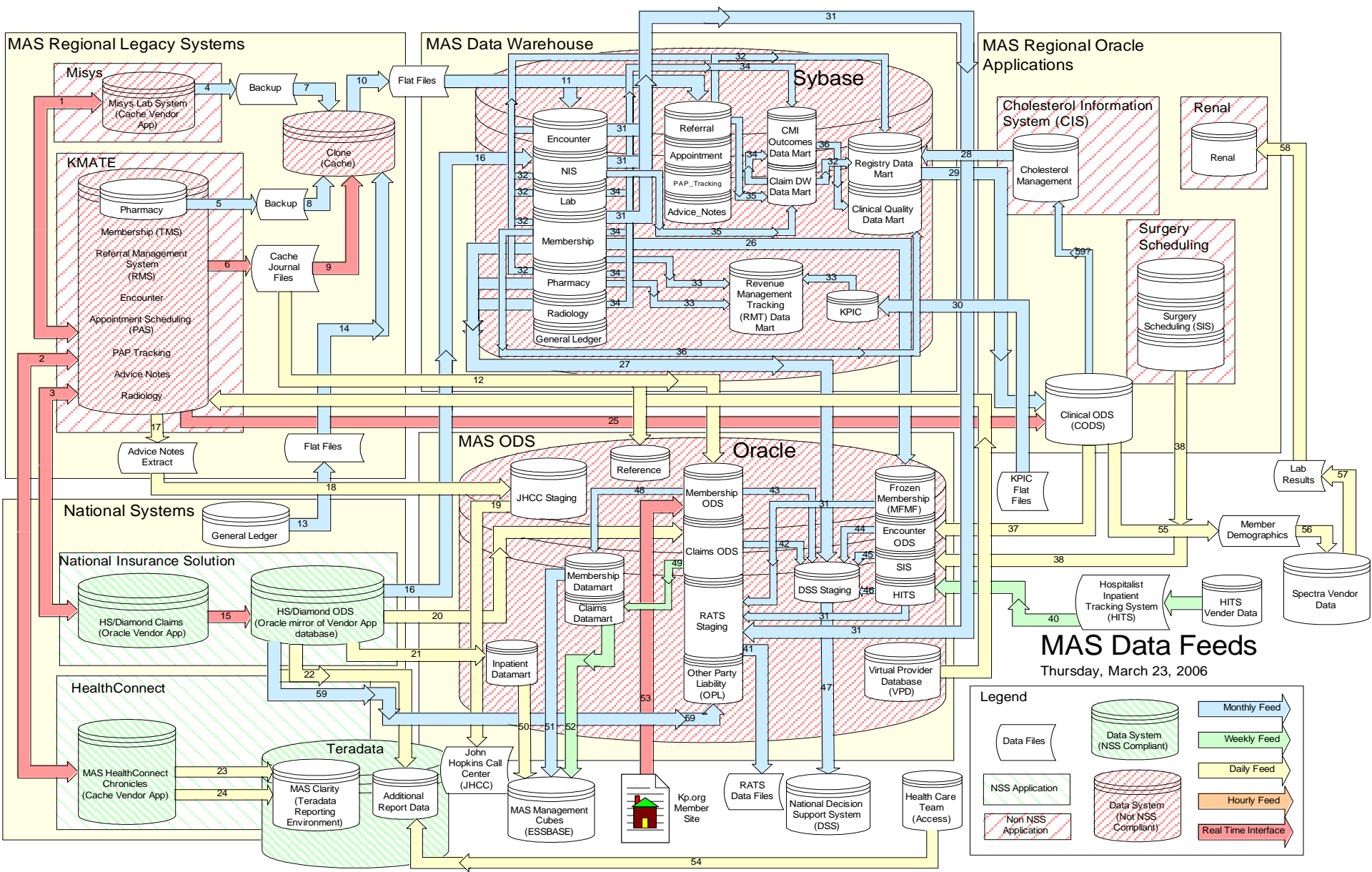
Development of KPMAS Data Warehouse: Example in Effort; Each Region Has Own "Data Warehouse"
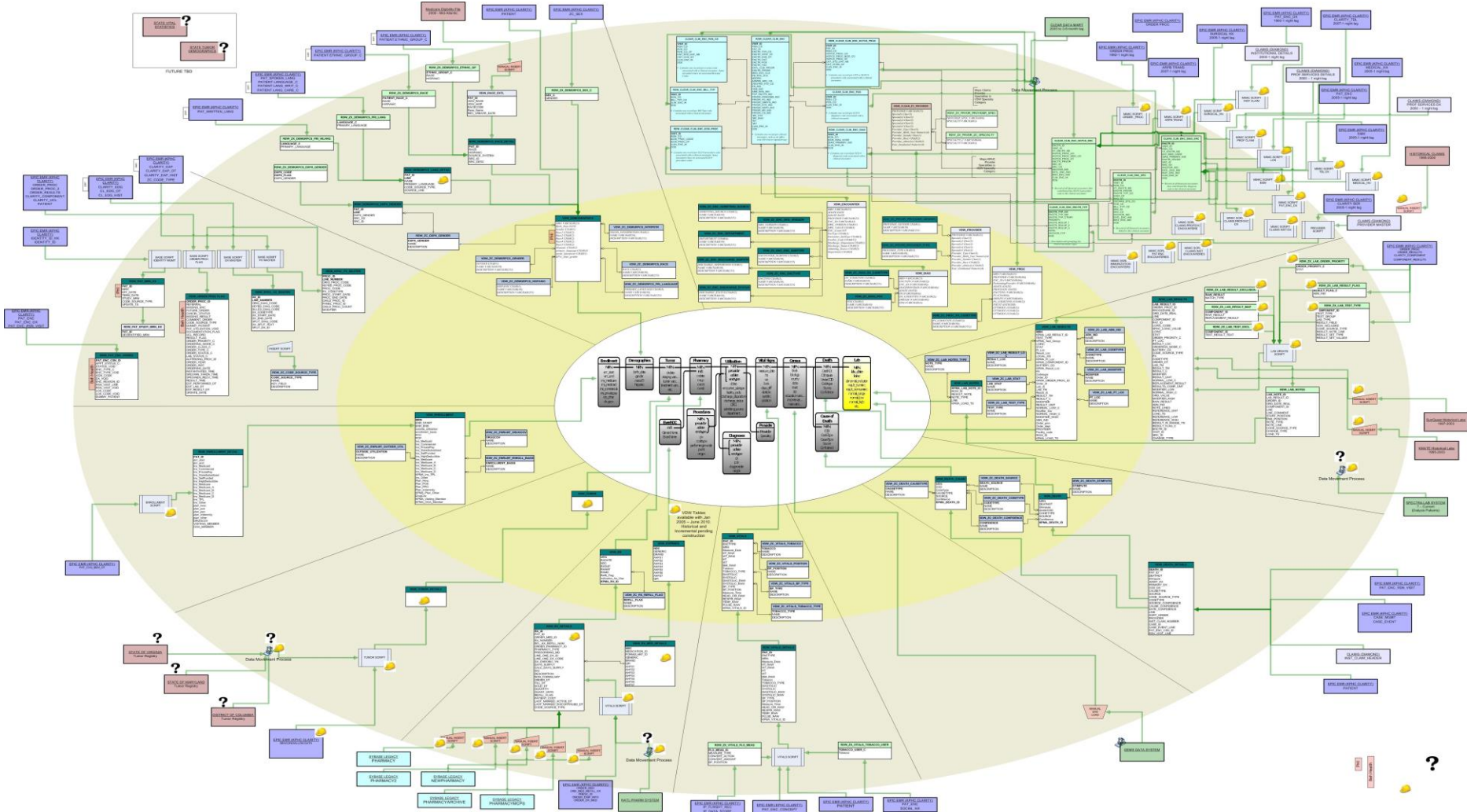
HCSRN Virtual Data Warehouse
The Analyst's Toolkit—But again, the MRN is key!
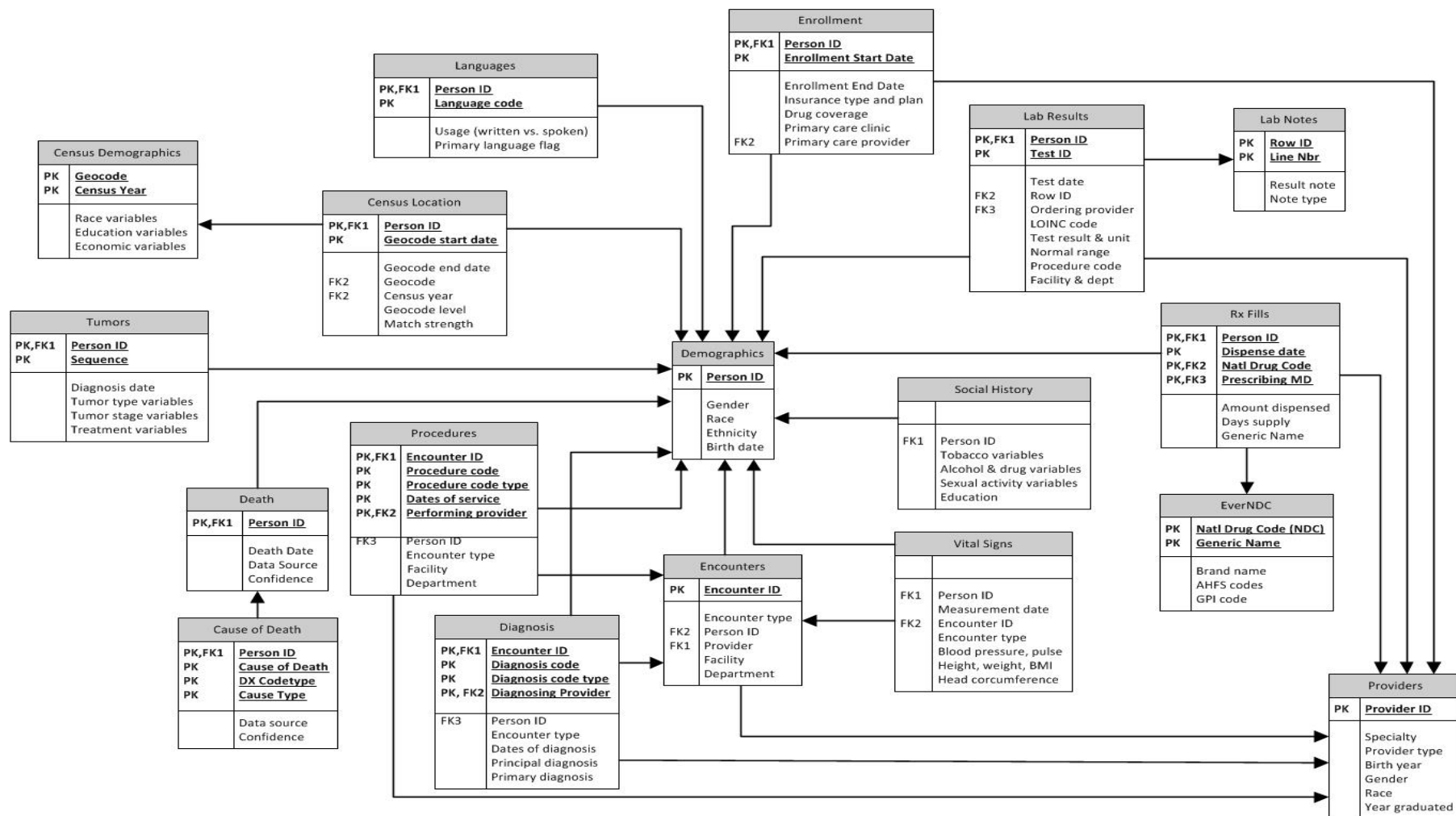
But We Can Also Coordinate this Across Systems--HCSRN

Figure R2. Health Care Systems Research Network Member Institutions

The Virtual Data Warehouse Used by all members of KP and HCSRN

How we do such research

Figure R3. Virtual Data Warehouse Data Domains
☐ Implemented Across HSCRN ☐ Implemented in KP Regions ☐ Planned
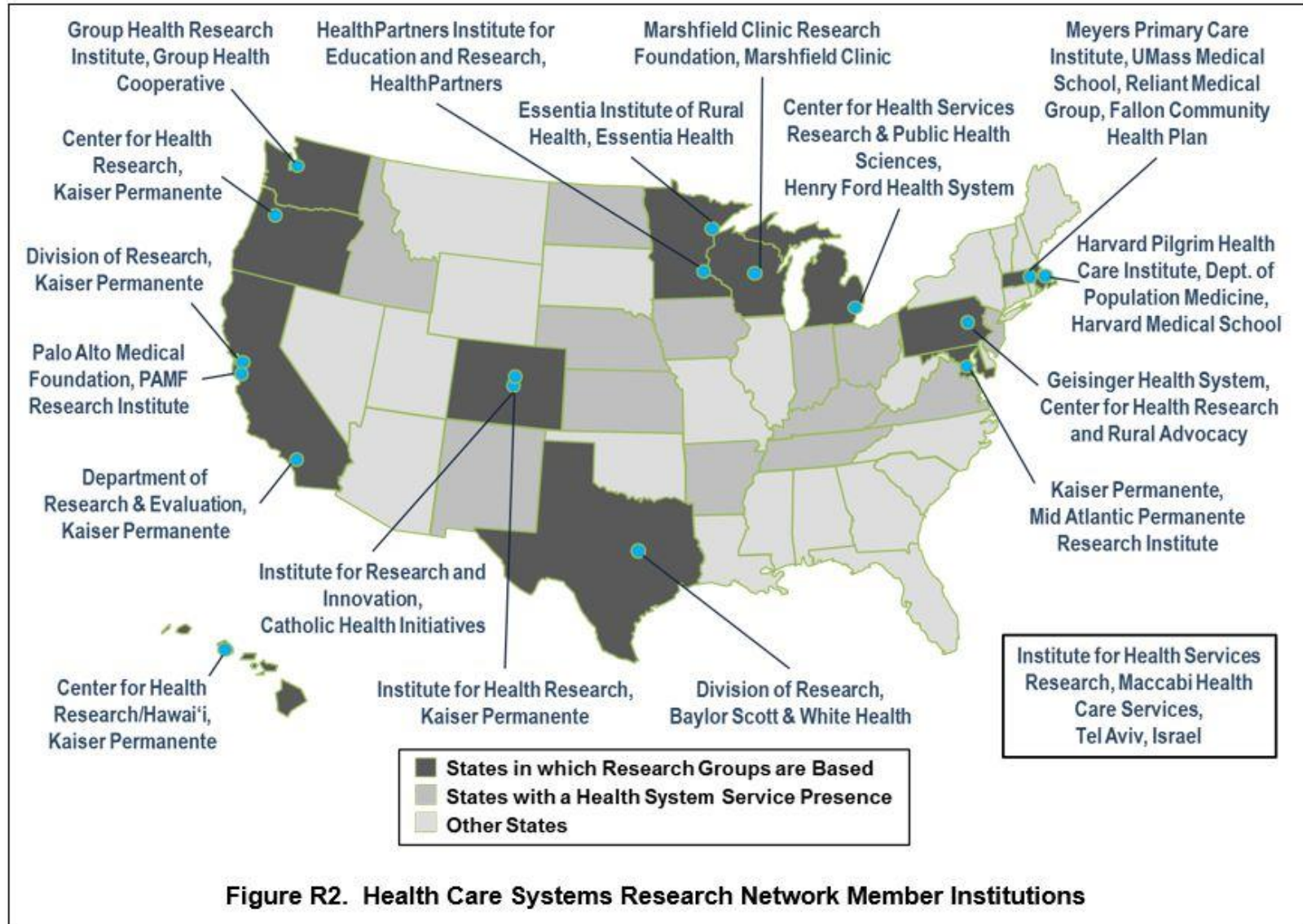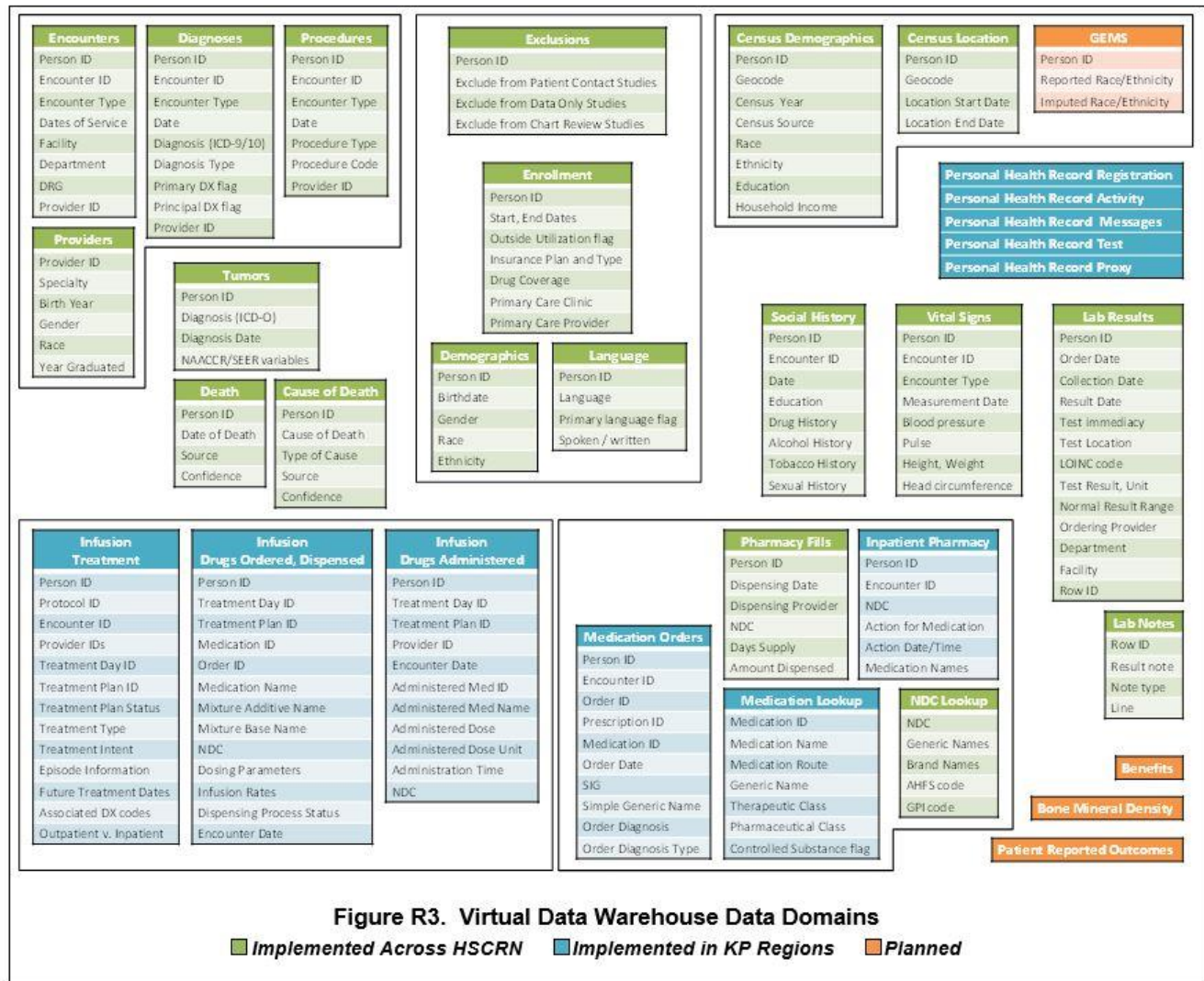
Note that there are other models, including PCORnet Common Data Model
Similar principles for NA-ACCORD

KAISER PERMANENTE®

NA-ACCORD Collaboration

NA-ACCORD as of 2012
- ○ Clinic Site
- **Number of Persons**
  - ▨ Insufficient Data
  - 100 - 328
  - 328 - 945
  - 945 - 3,178
  - 3,178 - 22,029
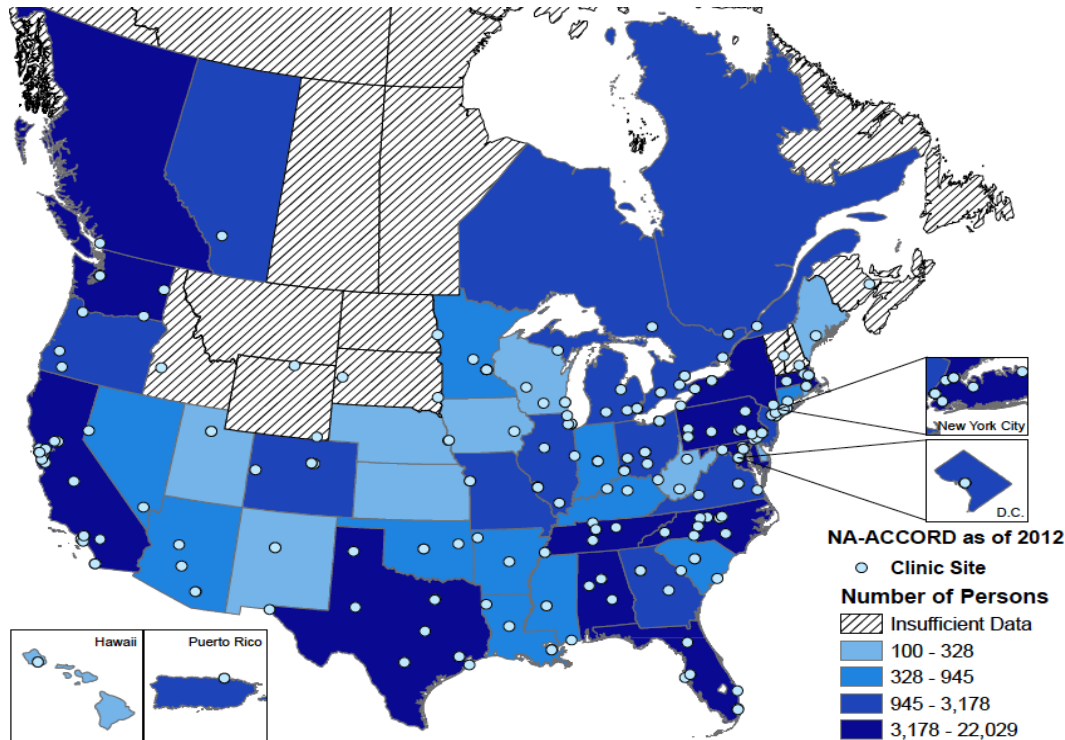
Slides courtesy of Richard Moore, JHM

- 130,000 HIV-infected persons in the cohort; >1 million person-years of follow-up time; reflects the North American epidemic demographically
- Productive collaboration:
  - Over 60 national and international presentations
  - Over 40 papers published
  - 10 other federal grants using this resource

25 Collaborating Cohorts in Canada and US (>200 sties)
Participants from: 47 US states and D.C., 1 US territory,
and 5 Canadian Provinces

NA-ACCORD Data Elements

- Demographic
- Clinical
  - Clinical diagnoses
  - Laboratory
  - Medications
  - Procedures (some)
  - Hospitalization and Ambulatory visits
  - Health Insurance
- Cause of death

- Data transmitted from each participating cohort to a central data core, data transmitted in a standardized fashion, combined with data from other cohorts for analyses

Some Examples of How We Use This—Back End and Front End

KAISER PERMANENTE®

Mid-Atlantic Permanente Research Institute

- **Our mission is to advance medical knowledge and improve the quality of care and health of our patients and communities we serve by conducting innovative scientific and clinical research.**

ORIGINAL RESEARCH & CONTRIBUTIONS

Expanding Access to Care and Improving Quality in the Mid-Atlantic States Safety-Net Clinics: Kaiser Permanente's Community Ambassador Program

Jared Lane K Maeda, PhD, MPH; Jacqueline J Bradley, MSN, CRNP; Sarah R Eissler, MSN, CPNP; Marcia LoBrano, MD, MPH; Mindy R Rubin; Maritha Gay; Michael A Horberg, MD, MAS, FACP, FIDSA; Bernadette C Loftus, MD

Perm J 2015 Spring;19(2):22-27

http://dx.doi.org/10.7812/TPP/14-109

Hepatitis C Cascade of Care
Kaiser-Permanente, Mid-Atlantic States, 2003-2015

Rodriguez CV, Rubenstein K, Hu H, Linus B, Horberg M. *Increasing Hepatitis C Virus (HCV) Screening and Linkage to Care in a Large Integrated Health System.* 2015 American Association of Liver Diseases 66th Annual Meeting, San Francisco, CA, Nov 2015
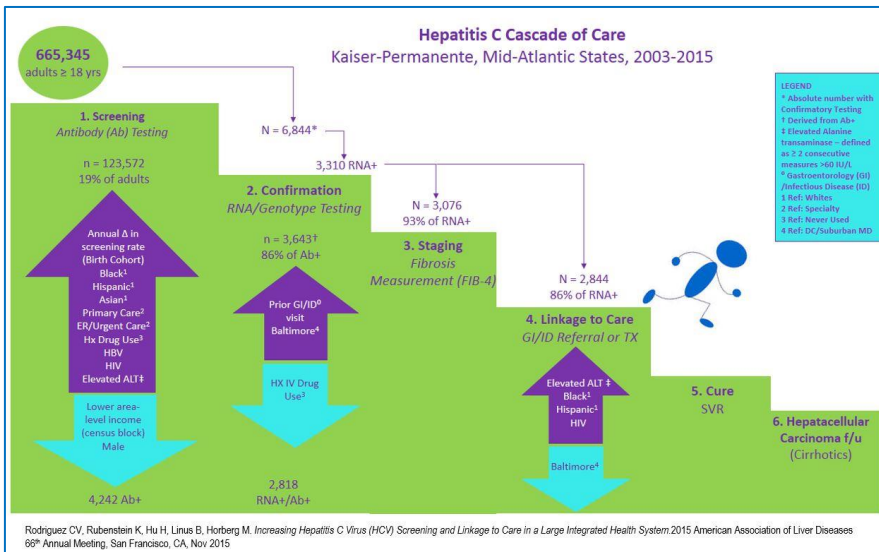
AIDS PATIENT CARE and STDs
Volume 29, Number 11, 2015
© Mary Ann Liebert, Inc.
DOI: 10.1089/apc.2015.0139

CLINICAL AND EPIDEMIOLOGIC RESEARCH

The HIV Care Cascade Measured Over Time and by Age, Sex, and Race in a Large National Integrated Care System

Michael Alan Horberg, MD, MAS,[1–3] Leo Bartemeier Hurley, MPH,[3,4] Daniel Benjamin Klein, MD,[3,5] William James Towner, MD,[3,6] Peter Kadlecik, MD,[1,3] Diana Antoniskis, MD,[3,7] Miguel Mogyoros, MD,[3,8] Philip Sigmund Brachman, MD,[3,9] Carol Louise Remmers, PhD,[10] Rebecca Claire Gambatese, MPH,[10] Jackie Blank, MBA,[2,3] Courtney Georgiana Ellis, BS,[3,4] and Michael Jonah Silverberg, PhD, MPH[3,4]

How does MAPRI contribute to the Value Equation?

1. Study quality measurement and quality improvement
   - Examples include HIV and HCV
2. Provide access to clinical trials
   - Internalizing care
   - Gaining access to the latest in medical care
   - Improve the care for these patients
3. Study new programs in care
   - Studying the ongoing implementation of HCV screening and early treatment pathway
   - Studied our new "Exchange" patients
   - Sickle cell transitions program
     - Improving Transitions from Pediatrics to Adult Heme-Onc
4. Registry Development with Intentional Clinical Applications
5. Monitoring Drug Safety
   - "Sentinel" work with FDA
   - Raltegravir Study (with TPMG and SCPMG)

GOAL: MAXIMUM VALUE

$$V(\uparrow) = \frac{Q(\uparrow) + PE(\uparrow)}{C(\downarrow)}$$

(VALUE) = (QUALITY) + (PATIENT EXPERIENCE) Access & Service / (COST)

KAISER PERMANENTE®

How We're Working with KPMAS Daily

- **Registry Work:**

  - Use of Tableau enhanced HIV physician reports is helping to shape data driven care

  - Development of Clinical Disease Registries are being used by operations for targeting patients for case management

  - Working with Population Care Management to develop enhanced Diabetes registry--in progress

  - Development of CKD, COPD, HCV, HBV, Sickle Cell Registries—all with clinical component and provider reports

    - Including HCV reports for clinical pharmacy

- Disease Registries within MAPRI
  - HIV
  - HCV
  - HBV
  - CKD and ESRD
  - COPD
  - CHF
  - Congenital Heart Disease
  - Rheumatoid Arthritis
  - Sickle Cell
  - Tumor

- In Development
  - Asthma
  - Diabetes
  - Cirrhosis

How We're Working with KPMAS Daily (2)

- Data Driven Visual Analytics

  – Development of basic query tools and analytics for physician leaders

  – Introduce novel Visual Analytics for population insights
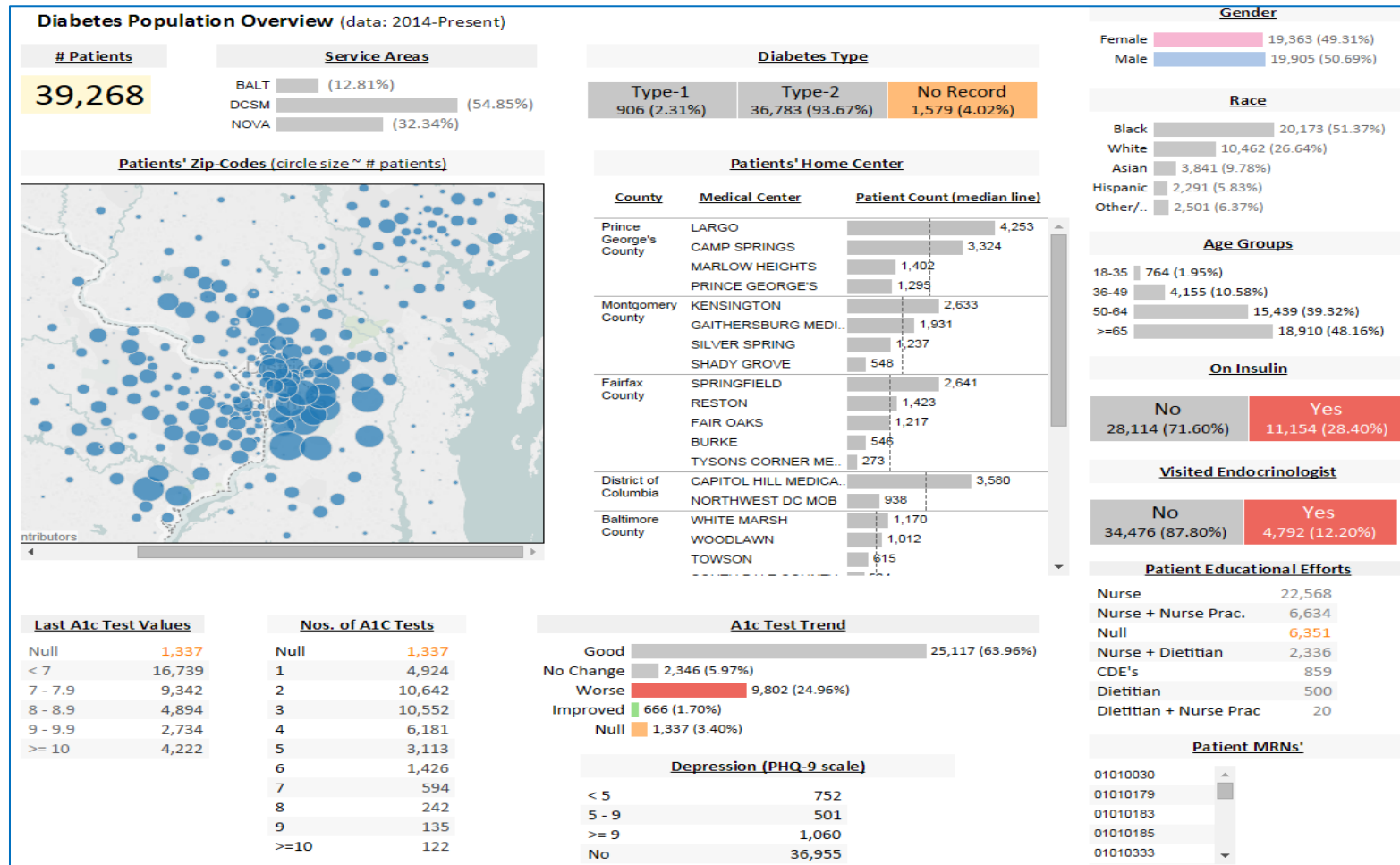
Interactive HIV Physician Centric Actionable Dashboard
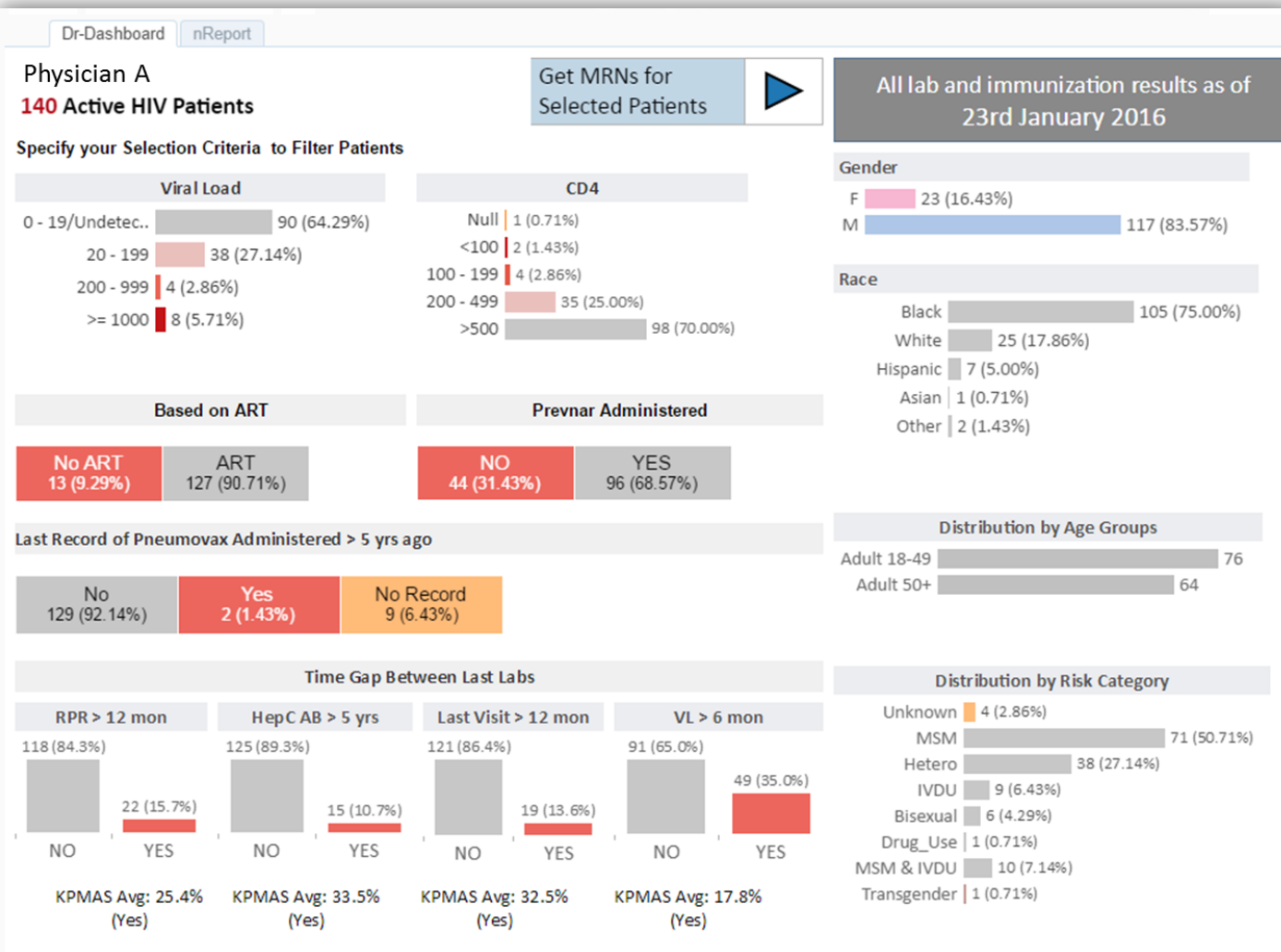
- To improve physician performance

- Quickly identify and close care gap

Mane K, Blank J, Horberg M. (2016) Visual approaches to bring population data insights at your fingertips. *22nd Annual HCSRN Conference, Atlanta, GA.* April 2016.

Using Data for HIV Quality Metrics and Improvement

Engagement in Care and Factors Affecting Such Outcomes

Adapted from Mugavero, 2011

Table 2. Regression Results for Comparing 1 visit (with or without additional communications) to ≥2 In-Person Visits

	Unadjusted Analysis			Adjusted Analysis*		
				Reference group: ≥2 in-person visits annually		
	Odds Ratio	95% CI	p-Value	Odds Ratio	95% CI	p-Value
1 In-Person only	0.48	(0.31, 0.75)	<0.01	0.48	(0.30, 0.74)	<0.01
1 In-Person + Telephone only	0.47	(0.28, 0.78)	<0.01	0.46	(0.28, 0.78)	<0.01
1 In-Person + E-mail only	0.88	(0.59, 1.30)	0.51	0.81	(0.54, 1.21)	0.29
1 In-Person + Telephone + E-mail	1.16	(0.69, 1.95)	0.57	1.06	(0.63, 1.80)	0.82

1958 patients included in this analysis, with exclusions due to missing lab values in 2014
*--Regression adjusted for sex, age, race/ethnicity, HIV risk behavior

❖ 1 in-person visit only per year is insufficient to achieve viral suppression at rates similar to 2 or greater in-person visits annually (OR=0.48, p<0.01), even if supplemented by a telephone visit (OR=0.46, p<0.01).

❖ However, 1 in person plus e-mail alone (OR=.81, p=0.29) or e-mail plus telephone (OR=1.06, p=.82) was associated with similar HIV viral suppression as 2 in-person visits.

Table 3. Comparing ≥2 In-Person Visits with Additional Communications to In-Person Visits Only

	Unadjusted Analysis			Adjusted Analysis		
				Reference group: 2 in-person visits only annually		
	Odds Ratio	95% CI	p-Value	Odds Ratio	95% CI	p-Value
2 In-Person + Telephone only	1.33	(0.78, 2.27)	0.30	1.28	(0.75, 2.21)	0.37
2 In-Person + E-mail only	1.82	(1.10, 3.00)	0.02	1.57	(0.94, 2.63)	0.09
2 In-Person + Telephone + E-mail	1.53	(0.93, 2.53)	0.09	1.35	(0.80, 2.25)	0.26

1278 patients included, with exclusions due to missing lab values or fewer than 2 in-person visits in 2014
*--Regression adjusted for sex, age, race/ethnicity, HIV risk behavior

❖ Among the subset of patients with at least 2 in person visits, supplementing with telephone and/or email was associated with a greater odds of viral suppression compared with 2 in person visits only, although results did not reach statistical significance.

Using Big Data to Answer Ongoing Quality Questions of Care

How often do patients need to be seen?
- **Resetting the standard definition of retention in care**

Horberg, Blank, Rubenstein, Kadlecik, et. al., "Differences in HIV Viral Suppression by Frequency and Type of Healthcare Visits," *CROI 2016*, Boston, MA, February, 2016

Figure: Differences in Viral Suppression by Number and Types of Visits: 2 In-Person Visits in Calendar Year vs. 1 In-Person Visit
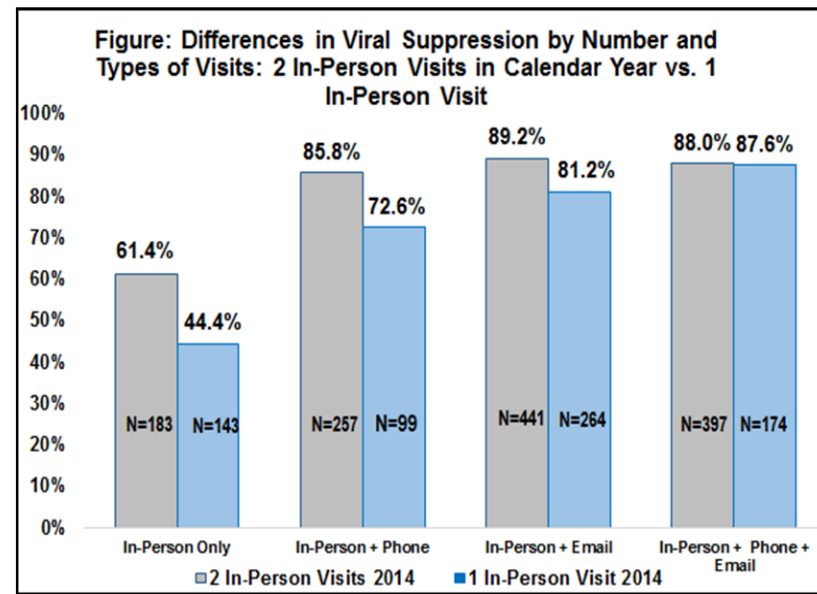
KP HIV Care Cascade 2010-2012

Subsequent stage is **dependent** on prior stage

Cannot determine undiagnosed in our system.
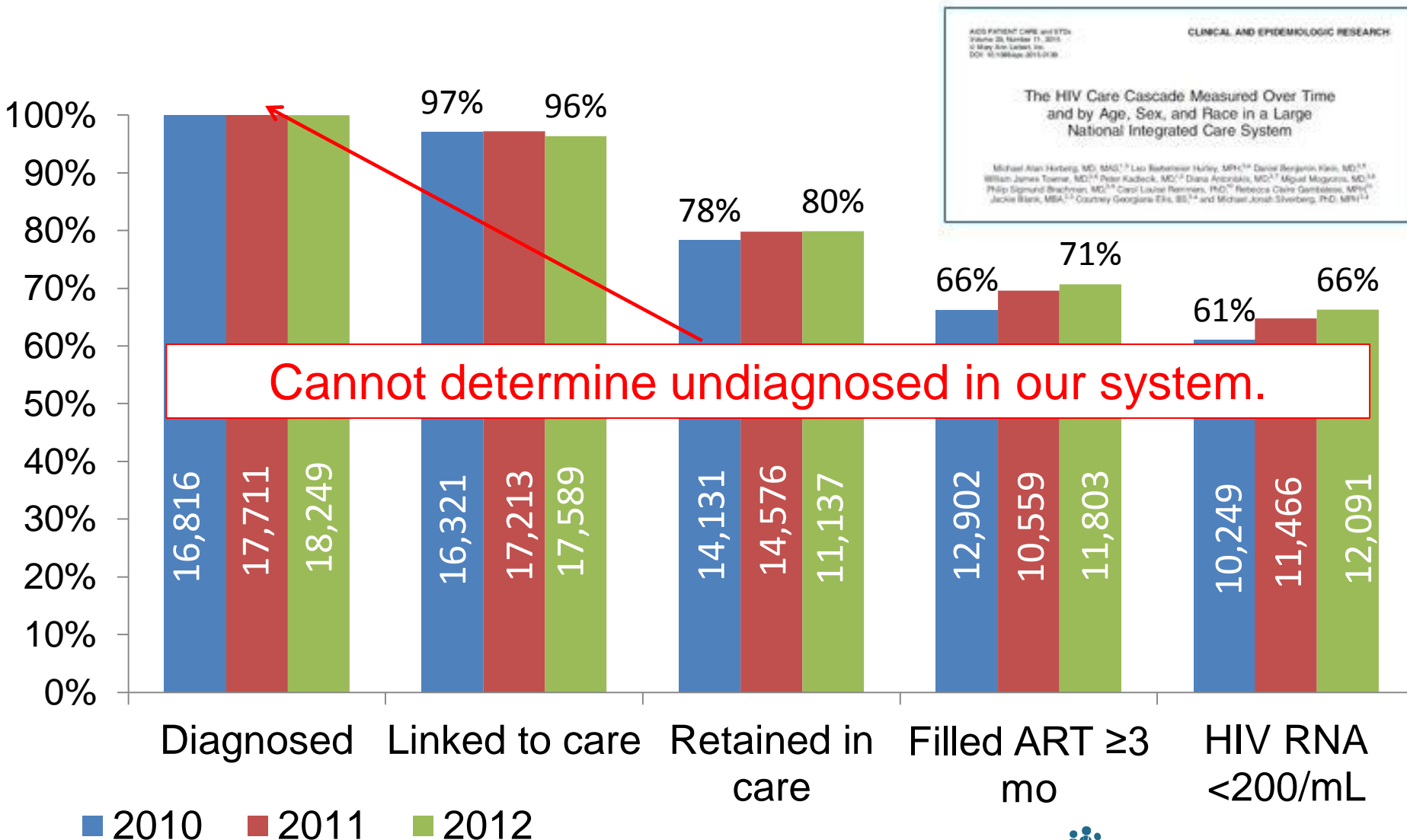
Legend: 2010, 2011, 2012

Categories: Diagnosed, Linked to care, Retained in care, Filled ART ≥3 mo, HIV RNA <200/mL

Percentages: 97%, 96%, 78%, 80%, 66%, 71%, 61%, 66%

Counts — Diagnosed: 16,816 / 17,711 / 18,249; Linked to care: 16,321 / 17,213 / 17,589; Retained in care: 14,131 / 14,576 / 11,137; Filled ART ≥3 mo: 12,902 / 10,559 / 11,803; HIV RNA <200/mL: 10,249 / 11,466 / 12,091

Horberg, et. Al., *AIDS, Patient Care, and STDs;* 2015

KAISER PERMANENTE®

But Methodology Matters!

Subsequent stage is **NOT** dependent on prior stage

Increase from prior stage is possible

Chart data by stage (2010, 2011, 2012):

- **Diagnosed**: 100% — 16,816 / 17,711 / 18,249
- **Linked to care**: 97% / 97% / 96% — 17,213 / 17,589 / 13,165
- **Retained in care**: 78% / 80% / 80% — 14,131 / 14,576 / 13,975
- **Filled ART ≥3 months**: 83% / 85% / 87% — 15,926 / 13,953 / 15,130
- **HIV RNA <200/mL**: 80% / 83% / 86% — 13,519 / 14,688 / 15,650

Legend: ■ 2010 ■ 2011 ■ 2012

KAISER PERMANENTE®

Horberg, et. Al., *AIDS, Patient Care, and STDs*; 2015
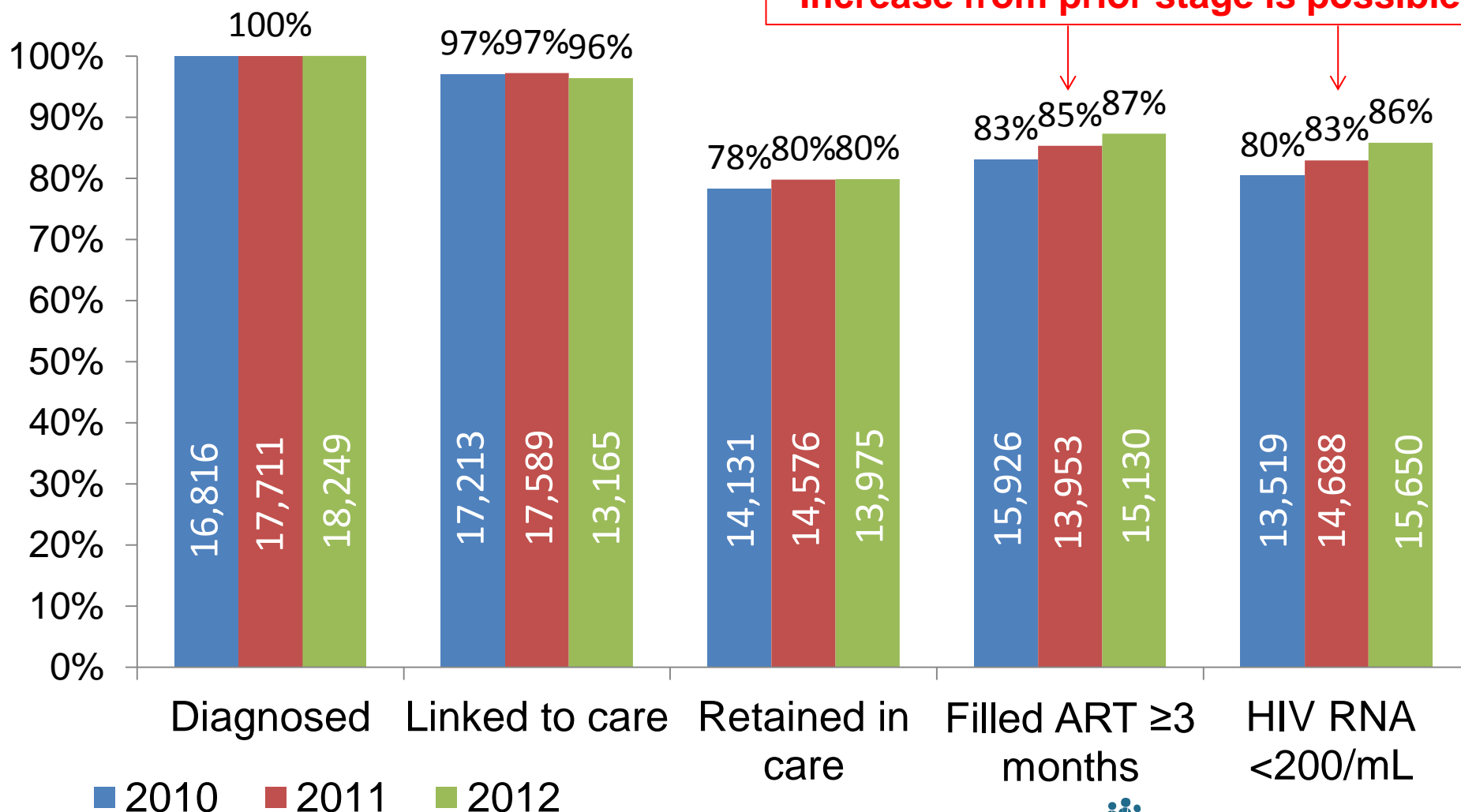
Can Stratify by Demographics: by Gender

KP HIV Care Cascade 2010 - 2012 Stratified by Gender
"Diagnosed" here is 100% by definition for all sub-populations, not included here.

	Linked to Care			Retained in Care			Filled ART ≥3 Months			Viral Suppression		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Men %	97.2	97.3	96.3	77.8	79.4	79.2	84.4	86.5	88.6	81.7	84.3	86.4
Women %	96.2	96.2	97.1	81.6	82.4	84.6	74.8	77.5	82.1	71.5	74.4	81.4

Horberg, et. al., *AIDS, Patient Care, and STDs;* 2015

KAISER PERMANENTE.
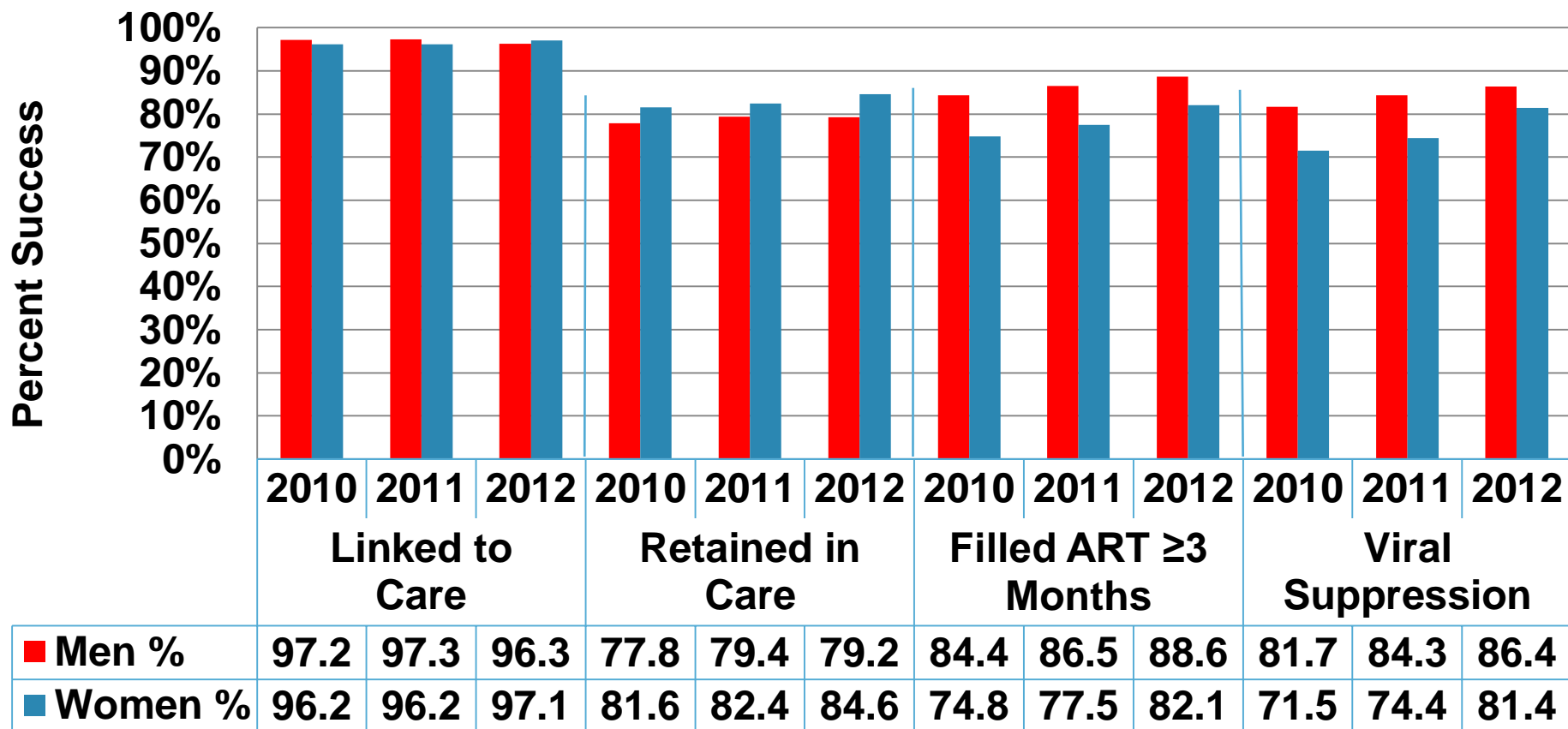
Can Stratify by Demographics: by Age

KP HIV Cascade 2010 - 2012 Stratified by Age Range

"Diagnosed" here is 100% by definition for all sub-populations, not included here

	Linked to Care			Retained in Care			Filled ART ≥3 Months			Viral Suppression		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
■ Age <35; %	95.8	95.8	94.9	76.8	77.9	77.4	69.8	75.5	78.5	64.6	69.4	73.1
■ Age 35 - 54; %	96.9	97.2	96.1	76.9	77.8	77.8	84.5	86.4	88.2	80.6	83.2	85.6
■ Age 55+; %	97.7	97.7	97.3	81.7	84.2	84.5	84.8	86.4	88.6	85.4	87	90.4
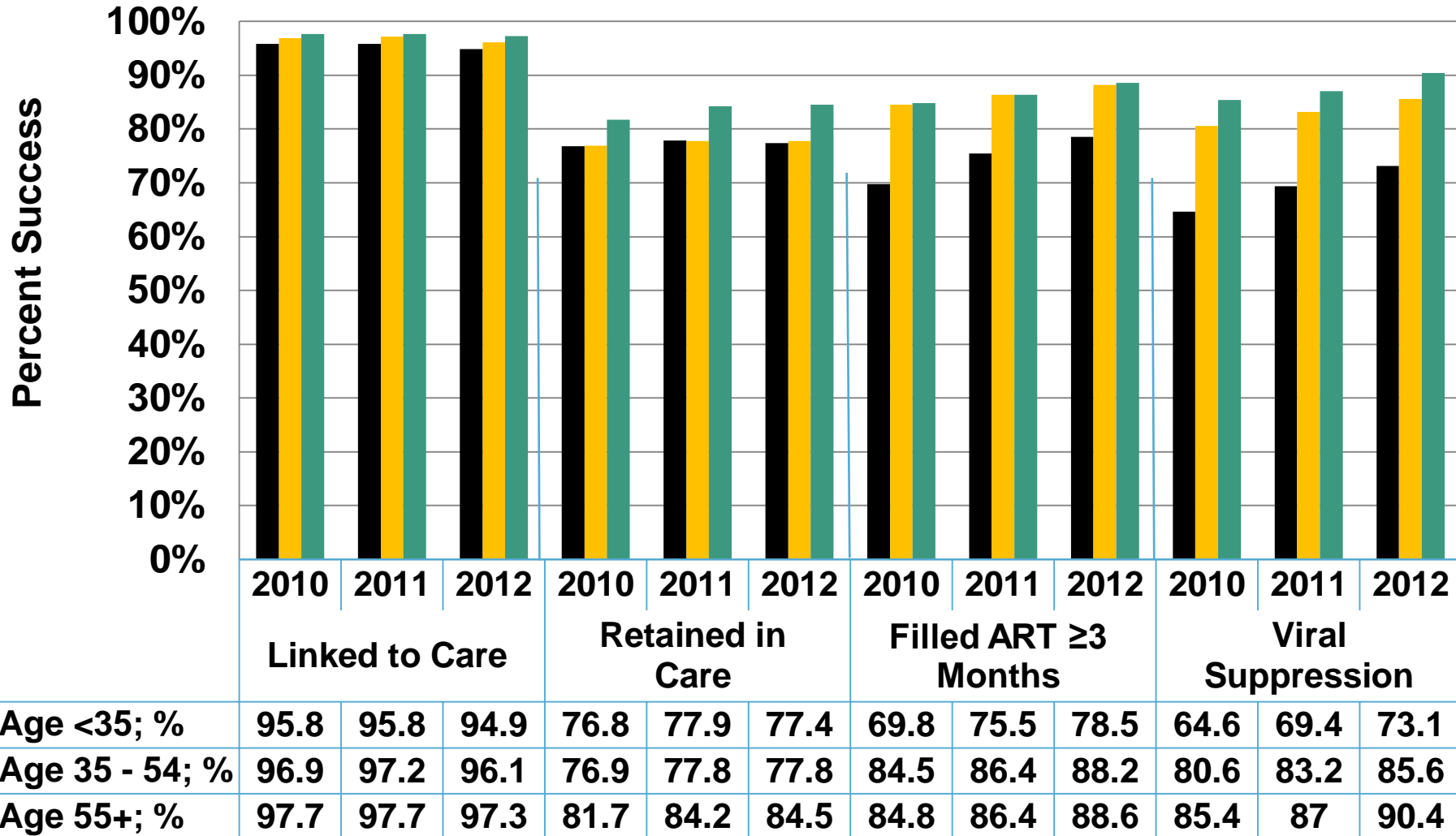
HIV Care Cascade by Race/Ethnicity

Significant (p<0.05): *-for race/ethnicity as categorical variable or as sub-group compared to all other sub-groups; †-Latino compared with Black

Legend: ■ White ■ Black ■ Latino ■ Asian/PI ■ Other/Unknown

Y-axis: Percent Success (0–100)

Linked to Care: No significant difference.

Retained in Care*: Latinos have significantly better retention.

Filled ART ≥3 months*: Whites have significantly greater ART use, but Latinos more than Blacks and Asians.

RNA <200/mL at Last Measure*: Whites have significantly greater viral suppression, but Latinos more than Blacks and Asians.

Horberg, et. Al., *AIDS, Patient Care, and STDs;* 2015

But Can Also Do for HCV—KPMAS Data

Hepatitis C Cascade of Care
Kaiser-Permanente, Mid-Atlantic States, 2003-2015

665,345 adults ≥ 18 yrs

N = 6,844*

3,310 RNA+

N = 3,076 93% of RNA+

N = 2,844 86% of RNA+

LEGEND
* Absolute number with Confirmatory Testing
† Derived from Ab+
‡ Elevated Alanine transaminase – defined as ≥ 2 consecutive measures >60 IU/L
⁰ Gastroentorology (GI) /Infectious Disease (ID)
1 Ref: Whites
2 Ref: Specialty
3 Ref: Never Used
4 Ref: DC/Suburban MD

1. Screening
Antibody (Ab) Testing

n = 123,572
19% of adults

Annual Δ in screening rate (Birth Cohort)
Black[1]
Hispanic[1]
Asian[1]
Primary Care[2]
ER/Urgent Care[2]
Hx Drug Use[3]
HBV
HIV
Elevated ALT‡

Lower area-level income (census block)
Male

4,242 Ab+

2. Confirmation
RNA/Genotype Testing

n = 3,643†
86% of Ab+

Prior GI/ID⁰ visit Baltimore[4]

HX IV Drug Use[3]

2,818 RNA+/Ab+

3. Staging
Fibrosis Measurement (FIB-4)

4. Linkage to Care
GI/ID Referral or TX

Elevated ALT ‡
Black[1]
Hispanic[1]
HIV

Baltimore[4]

5. Cure
SVR

6. Hepatacellular Carcinoma f/u
(Cirrhotics)

Rodriguez CV, Rubenstein K, Hu H, Linus B, Horberg M. *Increasing Hepatitis C Virus (HCV) Screening and Linkage to Care in a Large Integrated Health System.* 2015 American Association of Liver Diseases 66th Annual Meeting, San Francisco, CA, Nov 2015

34

KAISER PERMANENTE®

For Screening: Hepatitis C in KPMAS

- >5,100 active members with HCV in 2015
  - >10,000 in recent past have had HCV (active or former KP members)
- <10% have ever been treated for HCV
  - Fortunately, ~25-30% have cleared the virus (RNA -, don't need treatment)
- 40% have not had recent labs or been evaluated by GI
- We are now diagnosing about 90-100 new cases monthly with increased testing

Clinical Infectious Diseases Advance Access published March 10, 2016

INVITED ARTICLE

VIRAL HEPATITIS: Camilla S. Graham, Section Editor

Streamlining Screening to Treatment: The Hepatitis C Cascade of Care at Kaiser Permanente Mid-Atlantic States

M. Cabell Jonas,[1] Carla V. Rodriguez,[2] Jacquelyn Redd,[3] Dana A. Sloane,[3] Bradley J. Winston,[3] and Bernadette C. Loftus[1,4]

[1]Mid-Atlantic Permanente Medical Group, [2]Mid-Atlantic Permanente Research Institute, and [3]Gastroenterology Department, Mid-Atlantic Permanente Medical Group, Rockville, Maryland; and [4]Permanente Medical Group, Oakland, California

KAISER PERMANENTE®

Hepatitis C Cascade of Care in KPMAS

.HCVPATHWAY

At-Risk Born 1945-1965

MD places 'HCV Antibody & Protocol Order Panel (O210117)' or clicks BPA to initiate screening pathway **Learn More: .HCVPATHWAY**

— HCV Antibody POSITIVE →

Automatic Confirmation Tests (no action needed):
HCV RNA
HBsAg
HIV 1 & 2

HCV Antibody NEGATIVE ↓

MD communicates HCV Antibody negative results to patient - END **.HCVNEG**

HIV + ↓

MD refers patient to Infectious Disease[1] END

HCV RNA POSITIVE -or- HCV RNA POSITIVE / HBsAg POSITIVE →

HCV Care Coordinator
- **Communicates HCV diagnosis to patient**
- **Orders additional HCV Labs and Fibroscan**

Coordinator Offers:
Informational video
Educational sheets

— HCV RNA NEGATIVE →

Physician communicates HCV RNA negative results to patient, and counsels patient on risk reduction **.HCVABPOSVLNEG**

HCV Assessment Labs
HAV (hepatitis A) Total
HBsAb
HCV Genotype
Hepatic Function Panel
Ferritin
Iron, TIBC% saturation
Prothrombin with INR
TSH
CBC
Creatinine
Anti-mitochondria
Anti-smooth muscle
Anti-nuclear antibody-IFA

Fibroscan

→ Coordinator communicates final results to patient. Patient referred based on Fibrosis Stage: F0, F1, F2, F3, F4

F2-4 GI REFERRAL → Treatment options assessed → Screening Pathway Ends (manage in GI)

F0-1 PRIMARY CARE REFERRAL → Treatment Deferred → **Health Maintenance Alert for Annual Tests:** Fibroscan, CBC, Hepatic Function Panel, Alpha-Fetoprotein

Comorbidities, Abnormal Results, or >F2 stage

Activity carried out by the HCV Care Coordinator

Activity carried out by the ordering or consulting physician

[1] Infectious Disease physician completes HCV workup concurrent with HIV treatment

Questions?
Clinical: Dr. Michael Horberg 301-852-9307 (cell) or the GI Chiefs
Operational: Cabell Jonas, PhD 202-594-7836 (cell)
Hepatitis C Care Coordinator: Linda Steeby 703-674-7684

Ordering the Pathway

✓ Best Practice Alert for Baby Boomers

- If your patient is a Baby Boomer and is eligible, order the new screening pathway by clicking the BPA and placing the order inside.

- BPA fires in Adult Primary Care, GI, ID, and OBGYN

✓ Within the STI (sexually transmitted infections) Screening Order Set and Adult Health Assessment The new HCV screening pathway replaces the single HCV Ab test in these two Order Sets

30,260
HCV Antibody and Protocol Order
Panel screening orders
(as of Feb 2016)

776
Patients
diagnosed with
chronic HCV

76.9%
of patients with
chronic HCV
received a Fibroscan
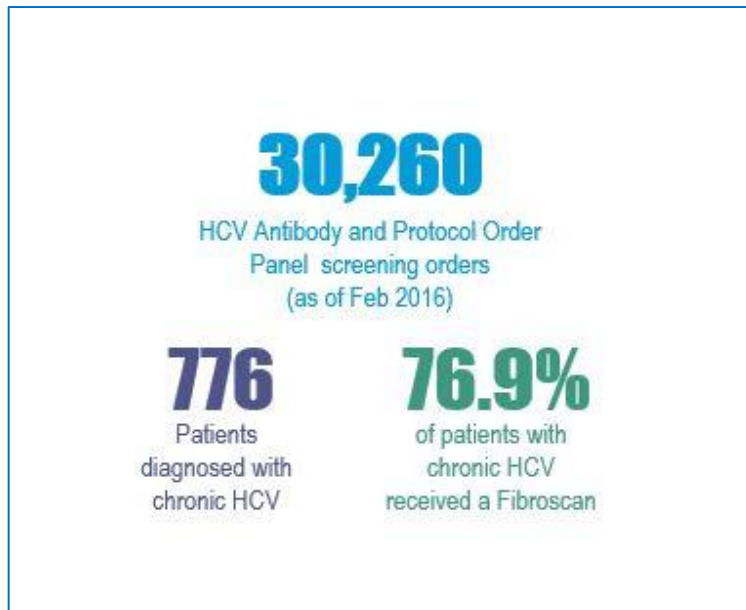
Ordering for Baby Boomers – Preventive Screening:
Click Visit Navigator → Best Practice at Left

Place the order

KAISER PERMANENTE®

STI Screening Order Set

KAISER PERMANENTE®

Adult Health Assessment Order Set

The Next Frontier?—Putting the Data at the Provider's Fingertips
--And Making Them Use It!

Population Health Built-in
PROACTIVE CARE DRIVEN BY TECHNOLOGY

Automatic prompts at *every visit in every department*

- **Care Gap Identification**
  - Immediate electronic action / order placement / booking to address
  - Systematized workflows / Smart Sets
- **Document the *Right* Info**

Medical vitals:
- blood pressure
- temperature
- pulse

plus
- BMI
- Smoking
- Exercise
- Alcohol

EXAMPLE
Patient visit to Ophthalmologist can prompt for needed mammogram

What if we did this for HIV?

KAISER PERMANENTE®

CKD Risk Prediction Score

Patient Estimated Risk for Chronic Kidney Disease (CKD)
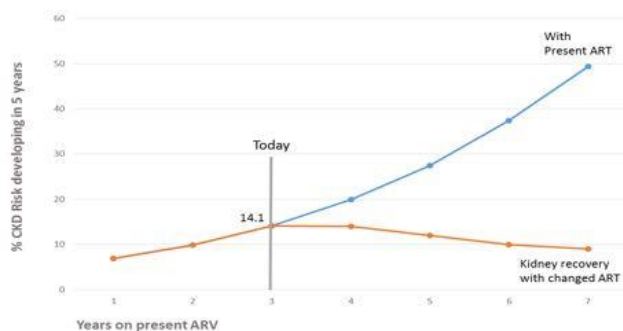
Figure 3: Simulation of CDST for ART

To Improve Kidney Health among Patients Using ART or PrEP

CKD Risk Prediction Score

Patient Estimated Risk for Chronic Kidney Disease (CKD) on PrEP
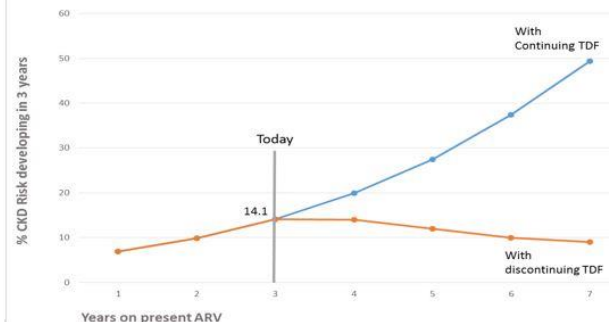
Figure 4: Simulation of CDST for PrEP

Concluding Thoughts

- Need to think about the back end as well as the front end of the EHR

- The EHR is a powerful tool

  – But need to know how to use it

- Data across systems is not only coming—it's here!

- HIPAA is not a small issue

- It has wide application for HIV and HCV

  – For screening, care improvement, quality measurement

- You need a Health Imformaticist for best results

"Working together, I am confident that we can stop the spread of HIV and ensure that those affected get the care and support they need."

--President Barack Obama

Strive only for the best. Be proud.
The great work continues.
Thank you

KAISER PERMANENTE®