USING THE CRISP HIE FOR PUBLIC HEALTH ANALYTICS

Maryland Department of Health and Mental Hygiene

Virtual Data Unit

CRISP

MARYLAND

DEPARTMENT OF HEALTH & MENTAL HYGIENE

CRISP

- Maryland statewide HIE.

- Chesapeake Regional Information System for Our Patients.

MARYLAND
DEPARTMENT OF HEALTH
& MENTAL HYGIENE

Background: Overdoses in Maryland

- Overdose problem in Maryland, using State data to track.

- <u>Data Collection</u>: Office of the Chief Medical Examiner (OCME) Vital Statistics death certificates

- <u>High Data Quality</u>: identifiers, place of occurrence, place of residence, date of death, type of drug(s), demographics.

- Data answers descriptive epidemiology's *Person, Place, and Time / Who, What, Where, When, and How Many?*

- ***In 2013, 858 individuals died of an overdose in Maryland.***

MARYLAND

DEPARTMENT OF HEALTH
& MENTAL HYGIENE

Surveillance:
Answers Often Lead to More Questions

How could these deaths have been prevented?

How can we identify individuals at risk and get them into treatment?

Did other overdoses occur previous to the death?

MARYLAND
DEPARTMENT OF HEALTH
& MENTAL HYGIENE

Retrospective Analysis:
Linking Overdose Deaths to CRISP

- <u>Question</u>: Did other overdoses occur previous to the death?

- <u>Data</u>: In the 858 individuals that died of an overdose in 2013, examine hospital utilization trends up to 12 months prior to death.

  - How many of these individuals had visits for overdose?

  - How many had readmissions?

- <u>Data Source</u>: CRISP, hospitalization and emergency department discharges (all 47 MD hospitals).

MARYLAND
DEPARTMENT OF HEALTH
& MENTAL HYGIENE

PRE-QUERY Retrospective Analysis: Linking Overdose Deaths to CRISP

1) **Data Quality Check**: Know quality and limitations of data.

   - Valid = Accuracy of measurement/observation/data

   CRISP has high quality data, no limitations of underreporting.

2) **Memorandum of Understanding(MOU)/Data Use Agreement(DUA)**: Why we need the data, how we will use it, level of granularity we can share publicly.

   *Created a MOU with CRISP that applies to all future data requests.*

3) **Methodology**: Identify the data sought from the HIE.

   Provided CRISP with discharge diagnosis codes for inclusions (all potential drugs of abuse) and exclusions (exclude attempted suicide/homicides).
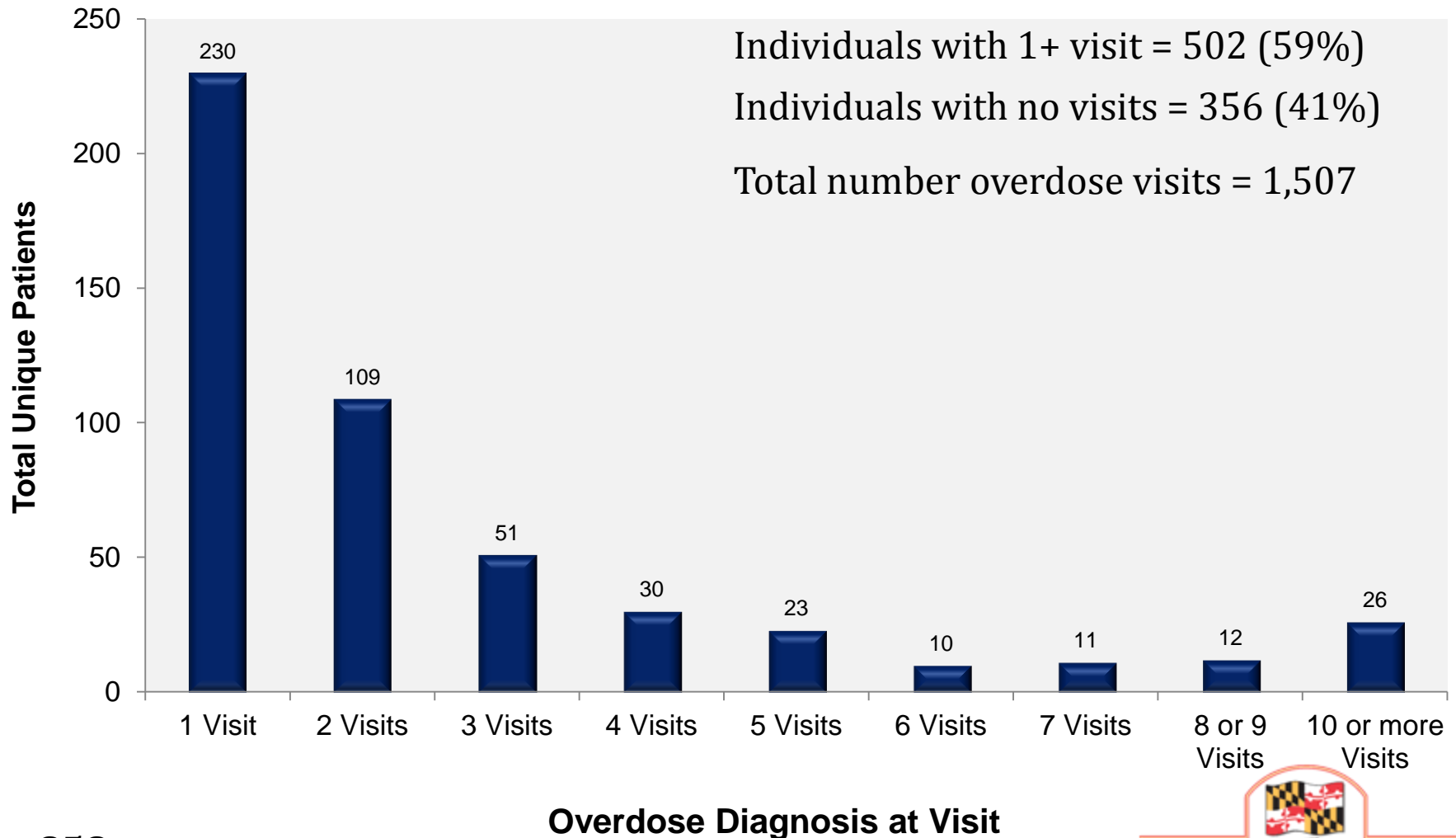
4) **Identify Data Question(s)**: Be specific.

   Hashed out questions before querying data.

MARYLAND
DEPARTMENT OF HEALTH
& MENTAL HYGIENE

Retrospective Analysis:
Linking Overdose Deaths to CRISP
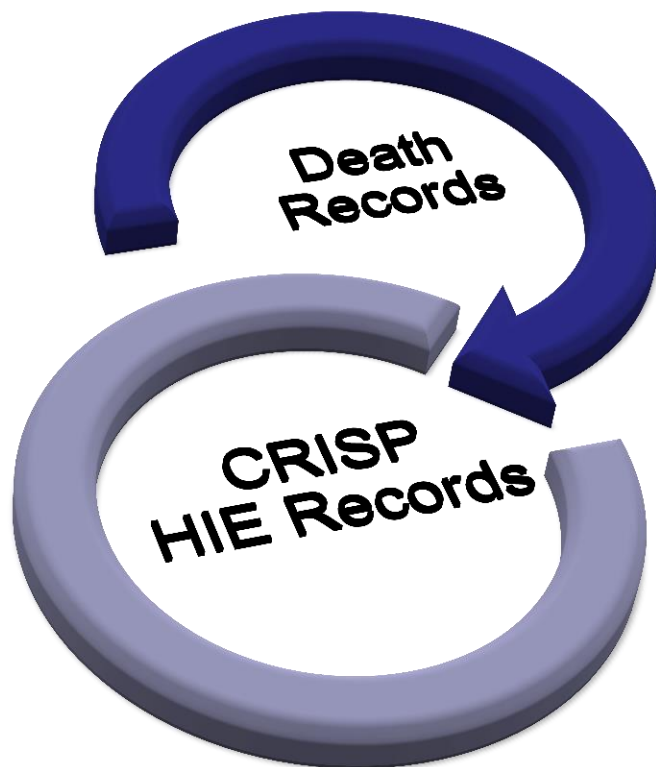
Overdose Hospitalizations/ED Visits Occurring Up to 1 Year Prior to Overdose Death, Maryland*

Individuals with 1+ visit = 502 (59%)

Individuals with no visits = 356 (41%)

Total number overdose visits = 1,507

Chart data (Total Unique Patients by Overdose Diagnosis at Visit):
- 1 Visit: 230
- 2 Visits: 109
- 3 Visits: 51
- 4 Visits: 30
- 5 Visits: 23
- 6 Visits: 10
- 7 Visits: 11
- 8 or 9 Visits: 12
- 10 or more Visits: 26

Overdose Diagnosis at Visit

n = 858

*Based on the 858 individuals that died of an overdose in 2013.

Taking Public Health Action with HIE Data

Hospital → Local Health Department → Addictions Treatment Services

*Hospitalization or ED visits.
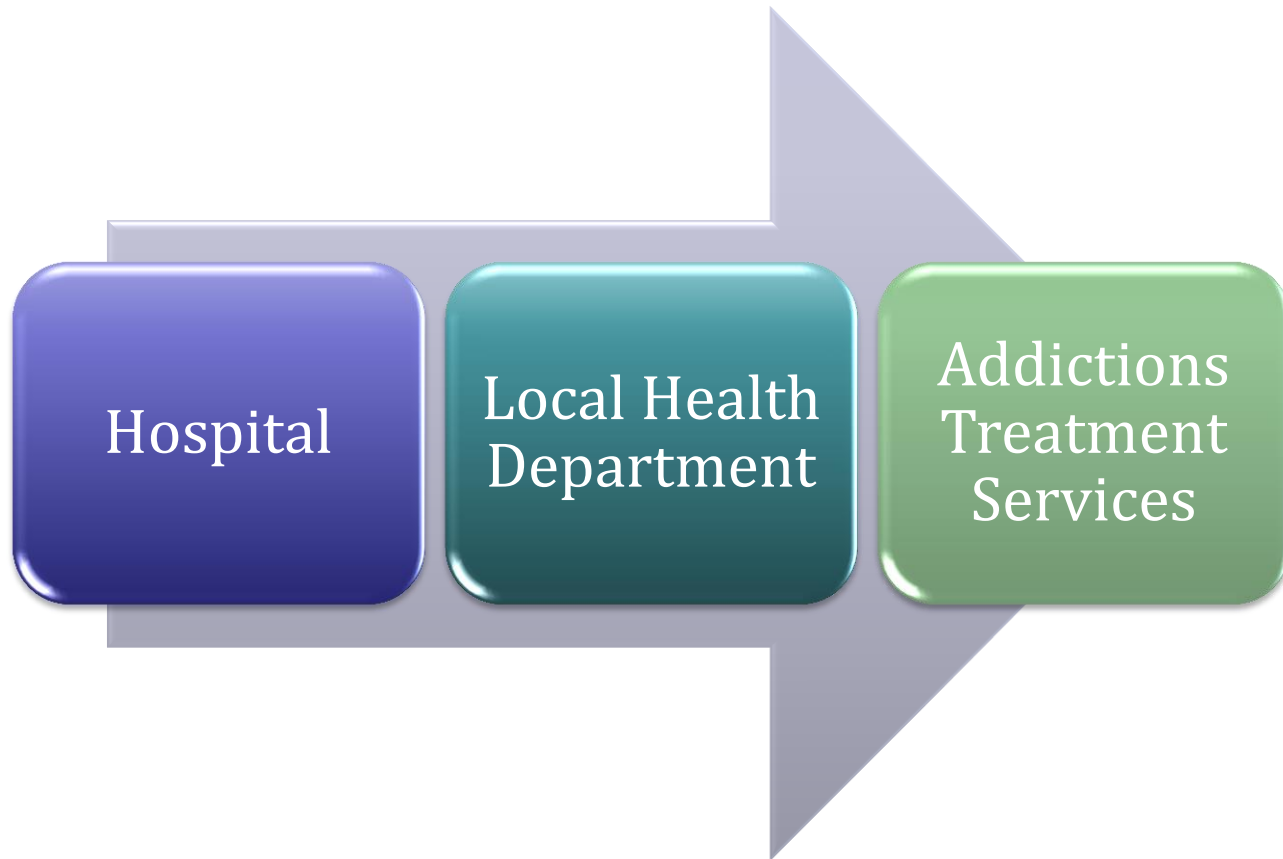
Taking Public Health Action with HIE Data

- DHMH working with LHDs to establish voluntary reporting protocols of all nonfatal overdoses.
- LHDs and addiction treatment services conduct outreach.
  - Refer individuals to treatment, provide education and resources on overdose prevention.

1) <u>January</u>: Pilot protocol with at least five hospitals.
2) <u>March</u>: Extend protocol statewide to all Maryland hospitals.
3) <u>April</u>: Review pilot by seeking input from the perspective of reporting physicians, individuals who overdosed, outreach workers, and others. Consider additional steps, including mandatory reporting of nonfatal overdoses.

*Hospitalization or ED visits.

Take Away: Analytics with HIEs

- *Data Quality: BIG DATA ≠ VALID DATA*

- *Memorandum of Understanding (MOU) and DUA*
- Data -> **Analyst/Epidemiologist** -> Requester
  - *Pre-query: prepares methodology*
    Post-query: analyzes data (rates, age-adjust, standardize)
    interprets data

- *Know the Data Question <u>BEFORE</u> Querying Data*
  - *Requesters often don't know exactly what they want*
  - *Standardize process of requesting data*
  - *Eliminates time wasted on new queries*

MARYLAND
DEPARTMENT OF HEALTH
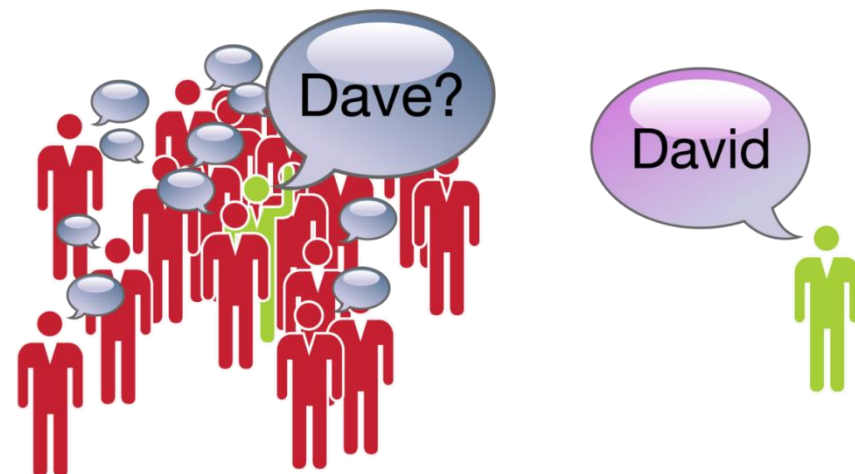& MENTAL HYGIENE

Patient Identity Management
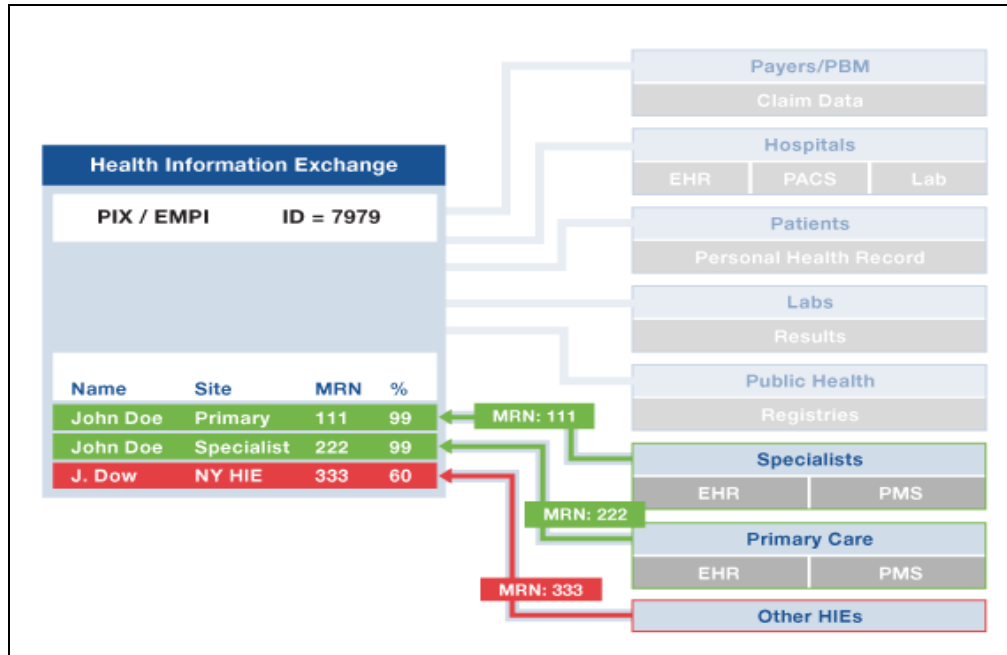
The Challenge:
Because no Unique Patient ID exists, CRISP must accurately and consistently link identities across multiple facilities to create a single view of a patient.
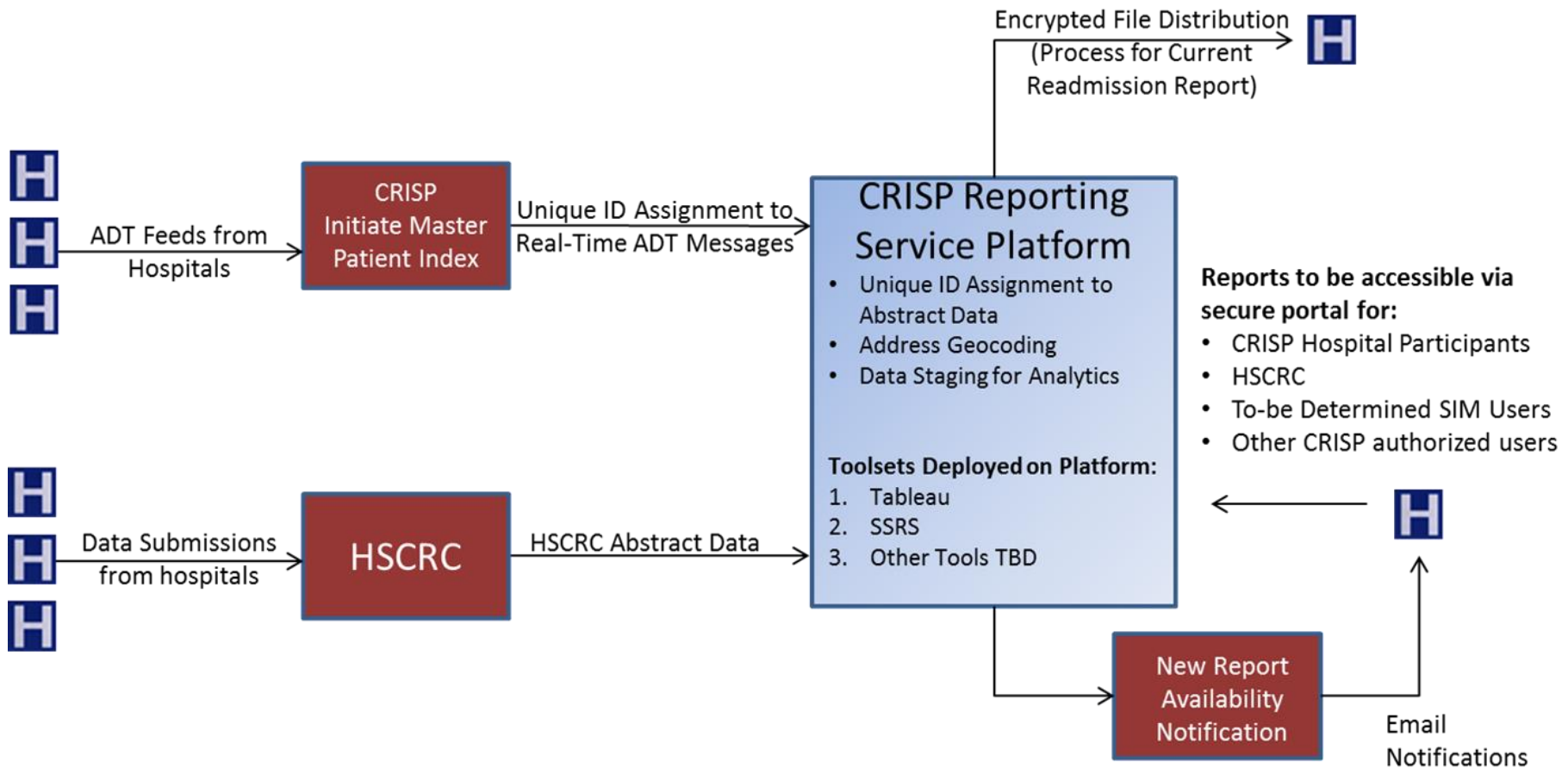
A near-zero tolerance of a false positive match rate with a low tolerance of a false negative match rate.

Effective Master Patient Indexing is a foundational concept to cross-data source / inter-facility analysis.
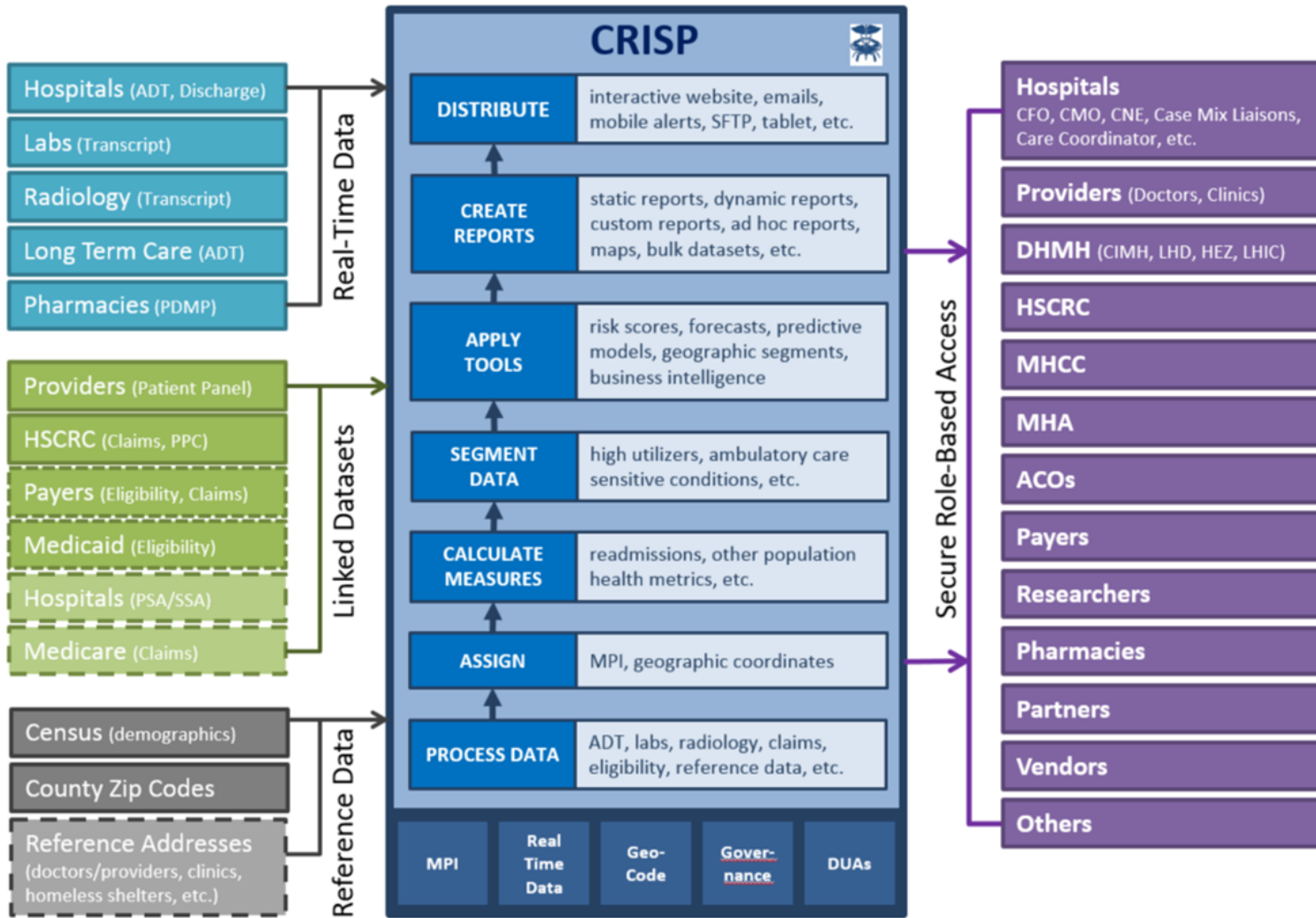
Basic CRS Data Flow

Encrypted File Distribution (Process for Current Readmission Report)

ADT Feeds from Hospitals

CRISP Initiate Master Patient Index

Unique ID Assignment to Real-Time ADT Messages

CRISP Reporting Service Platform
- Unique ID Assignment to Abstract Data
- Address Geocoding
- Data Staging for Analytics

Toolsets Deployed on Platform:
1. Tableau
2. SSRS
3. Other Tools TBD

Reports to be accessible via secure portal for:
- CRISP Hospital Participants
- HSCRC
- To-be Determined SIM Users
- Other CRISP authorized users

Data Submissions from hospitals

HSCRC

HSCRC Abstract Data

New Report Availability Notification
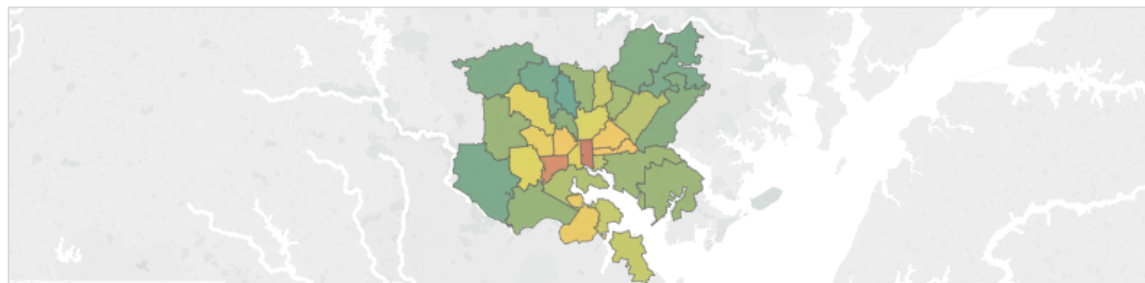
Email Notifications

CRS as a Population Health Utility

Data Visualization – Hospital Use Trends by County

Hospital Use Trends by County

Time Range October 2013 2:24:00 AM ——————————————————————————————— September 2014 4:48:00 PM

Name	IP Discharges	IP Charges	Readmissions	Readmit Rate	Readmit Charges	ED Visits	ED Charges
Allegany County	8,660	$125,371,014	1,050	13.05%	$125,371,014	35,201	$103,415,934
Anne Arundel Co..	49,998	$667,053,863	5,533	11.75%	$667,053,863	179,017	$429,325,904
Baltimore city	97,408	$1,496,715,490	14,854	16.16%	$1,496,715,490	485,729	$1,334,784,797
Baltimore County	92,968	$1,354,603,845	11,445	13.07%	$1,354,603,845	298,581	$963,155,717
Calvert County	6,823	$85,052,059	610	9.31%	$85,052,059	35,088	$69,040,048
Caroline County	3,227	$47,617,812	361	12.02%	$47,617,812	13,984	$30,850,896
Carroll County	14,692	$235,151,392	1,674	12.10%	$235,151,392	46,491	$139,591,822
Cecil County	7,479	$113,074,015	778	10.98%	$113,074,015	40,777	$92,935,662
Charles County	10,982	$126,334,723	1,170	11.09%	$126,334,723	59,135	$104,840,262
Dorchester Coun..	4,107	$66,686,165	504	13.30%	$66,686,165	21,583	$50,102,060
Frederick County	19,206	$246,585,345	1,915	10.58%	$246,585,345	64,709	$164,582,837
Garrett County	2,116	$26,382,788	160	7.93%	$26,382,788	13,579	$22,480,918
Harford County	24,162	$355,221,017	2,625	11.55%	$355,221,017	81,558	$234,084,790
Howard County	22,623	$307,231,039	2,314	10.87%	$307,231,039	62,712	$171,395,742
Kent County	2,067	$34,850,353	251	12.97%	$34,850,353	8,870	$24,533,672
Montgomery Cou..	65,173	$733,038,638	6,241	9.97%	$733,038,638	202,873	$559,400,295
Prince George's ..	59,825	$754,317,101	6,294	11.03%	$754,317,101	228,235	$617,151,339
Queen Anne's Co..	4,352	$64,347,156	463	11.32%	$64,347,156	19,325	$36,176,147
Somerset County	2,563	$36,436,917	299	12.18%	$36,436,917	12,749	$27,468,721
St. Mary's County	8,330	$87,571,496	757	9.34%	$87,571,496	48,560	$80,327,863
Talbot County	4,333	$69,002,340	487	12.31%	$69,002,340	16,137	$42,216,023
Washington Cou..	16,394	$212,130,977	1,867	12.17%	$212,130,977	60,972	$146,768,260
Wicomico County	10,436	$138,943,412	1,223	12.16%	$138,943,412	54,293	$104,233,796
Worcester County	5,227	$78,809,841	601	12.09%	$78,809,841	25,282	$54,146,899
Grand Total	543,151	$7,462,528,801	63,476	12.34%	$7,462,528,801	2,115,440	$5,603,010,405

Inpatient Utilization County: Baltimore city Zip: All

IP Discharges — $145M — $140M — $135M — $130M
February 2014 — May 2014 — August 2014

■ IP Discharges   ■ IP Charges

Readmissions and Charges County: Baltimore city Zip: All

Readmissions — 1500 — 1400 — 1300 — 1200
$145M — $140M — $135M — $130M
February 2014 — May 2014 — August 2014

■ Readmissions   ■ Readmit Charges

Emergency Department Utilization County: Baltimore city Zip: All

ED Visits — 180K — 170K — 160K
$240M — $230M — $220M
February 2014 — May 2014 — August 2014

■ ED Visits   ■ ED Charges

© OpenStreetMap contributors

Map Metric [ED Visits per 1k residents ▼]   209 ————————— 2,706

Thank You

Scott Afzal
Program Director, CRISP
Partner, Audacious Inquiry
safzal@ainq.com

Andrea Bankoski, MPH
Virtual Data Unit Manager
Maryland Department of Health
and Mental Hygiene
andrea.bankoski@maryland.gov

o **Mission:** *"To provide quality healthcare and education, improve the overall well-being of the family, bringing the underserved, ethnically diverse communities into the mainstream of our society, through a caring, effective, culturally and linguistically competent manner, respecting the dignity of all patients."*

First Clinic, opened 1990
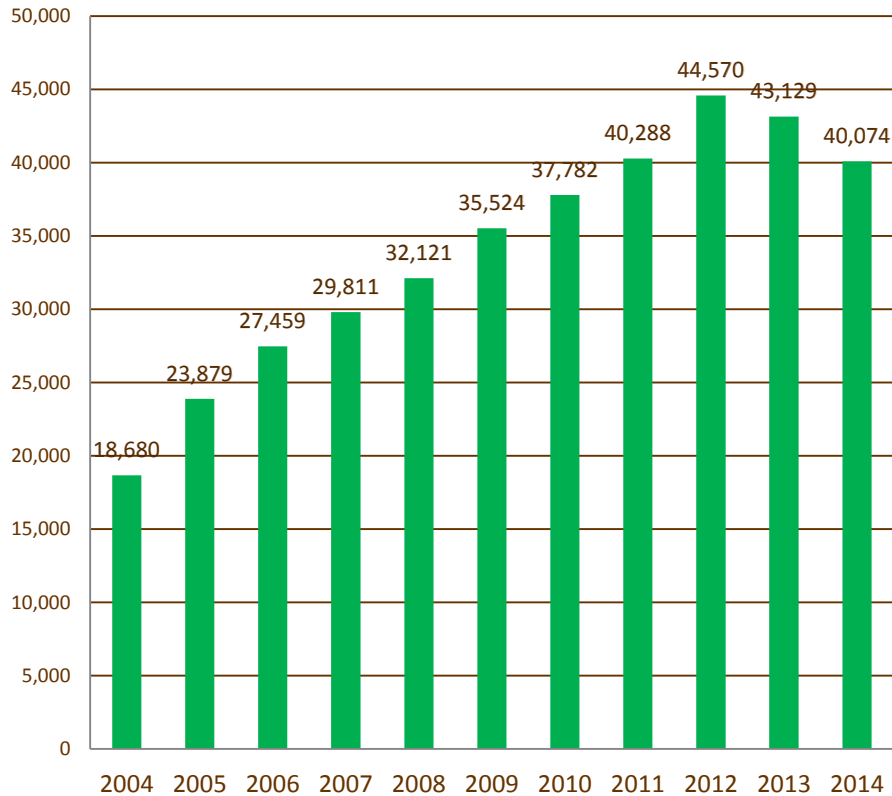
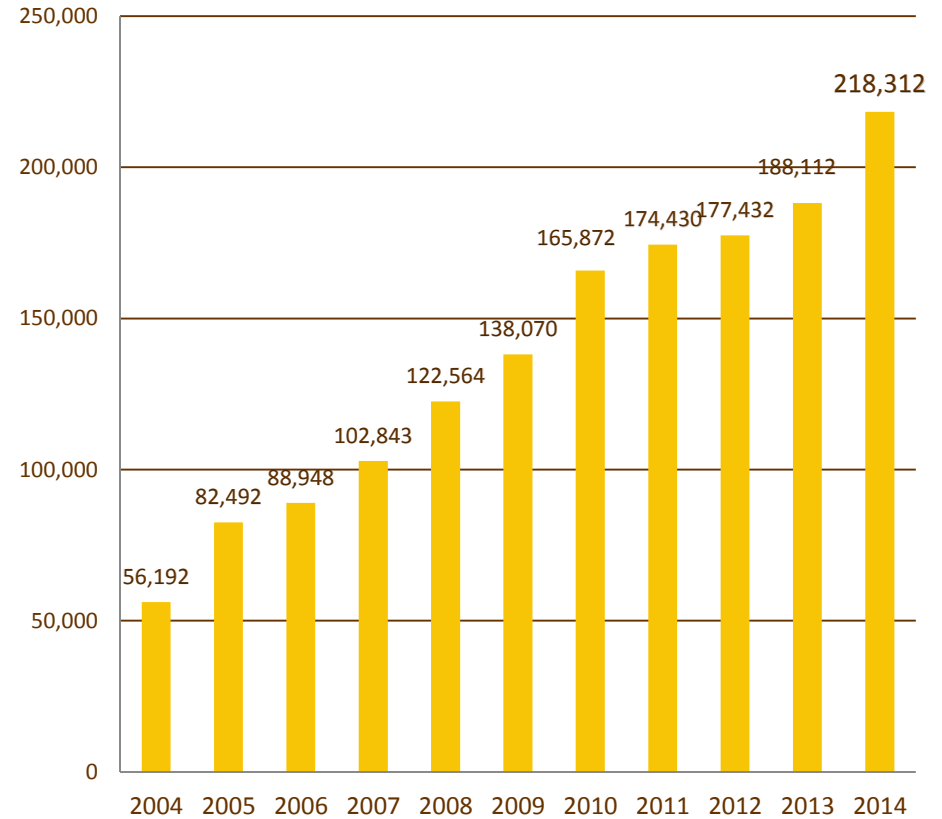*LEED Gold Health Center, opened 2010*

La Maestra Health Services

o Clinic formed in 1990 under La Maestra Amnesty Center. Need for culturally competent healthcare identified by council representing over 12,000 students who were immigrants and refugees

o Now 5 Medical & 8 Dental Centers in San Diego County; serve 45,000 patients per year

o New in 2014: Hope Clinic - Access Point for Homeless

o 4 school-based medical/dental clinics

o Mobile Clinic – medical, dental, optometry, telehealth

o Mental Health services onsite at main clinic, high school clinic, and through telemedicine.

o Digital Imaging services–Mammo, Xray, Ultrasound, Dexa

Annual Number of Patients & Visits

Total Unduplicated Patients

Year	Patients
2004	18,680
2005	23,879
2006	27,459
2007	29,811
2008	32,121
2009	35,524
2010	37,782
2011	40,288
2012	44,570
2013	43,129
2014	40,074

Total Visits

Year	Visits
2004	56,192
2005	82,492
2006	88,948
2007	102,843
2008	122,564
2009	138,070
2010	165,872
2011	174,430
2012	177,432
2013	188,112
2014	218,312

70% of Patients indicated best served in a language other than English in 2014

Serving the Culturally Diverse Community

o One of the most culturally diverse health centers in California.

o Majority of patients prefer to communicate in a language other than English

o Staff represents (is from) the cultures served, ensuring cultural and linguistic competency.

o Over 28 languages and dialects spoken by staff.

o _Medically Trained Cultural Liaisons_ provide valuable, ongoing support and education to local residents and identify new needs.
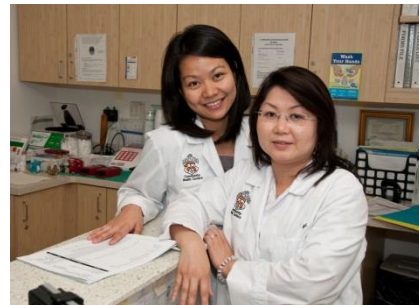
Residents of Public Housing

- Outreach & Health Fairs (education/screening) at Housing Sites

- Eligibility & Enrollment Assistance

- Transportation

San Diego Health Information Exchange

2010 - San Diego Beacon eHealth Community Pilot launched

o UC San Diego received a $15.3 million Beacon cooperative agreement to spearhead, through ARRA HITECH Act.

o One of 17 communities selected to pilot health IT and exchange

o Goal: strengthen the health IT infrastructure in the US to achieve strategic goals

- Higher quality, cost-efficient, patient-focused healthcare

- Improvements in population health

San Diego Beacon Partners:

o   UC San Diego

o   The Council of Community Clinics & its Community Health Center members (Including La Maestra)

o   County of San Diego Health & Human Services Agency

o   Hospital Association of San Diego and Imperial Counties

o   San Diego County Medical Society

o   San Diego Fire-Rescue Department

San Diego Health Information Exchange

San Diego Beacon eHealth Community

Objectives

o Integrate Health IT into Care Delivery

- Coordinate clinical improvement efforts
- Improve care coordination among providers
- Engage patients and families

o Measure and evaluate Clinical Targets

o Build Regional Health Information Exchange Infrastructure

San Diego Beacon eHealth Community

Clinical Targets:

- **Quality:** Cardiovascular & Cerebrovascular disease
  - Prevention: Risk factor control with statin and ACE-inhibitor use among high-risk patients
  - Acute care: EKG transmission from EMS to STEMI-receiving centers, reduce field-to-balloon times
  - Chronic care: Reduce 30 day re-admissions with improved discharge planning

San Diego Beacon eHealth Community

Clinical Targets:

o **Population Health**

- Immunization rates for children & at-risk adults
- Syndromic surveillance

o **Cost Efficiency**

- Reduce repeat ED visits and hospital admissions
- Reduce repeat imaging tests

San Diego Health Information Exchange

San Diego Beacon eHealth Community

Goals for Health Centers / Ambulatory Providers:

o Increase access to inpatient discharge summaries via web portal

o Connect providers to San Diego Immunization Registry to review upcoming immunizations for a patient and transmit immunization records back to the registry (Meaningful Use)

o Connect providers to the County of San Diego's Department of Public Health for syndromic surveillance reporting (Meaningful Use)

11

2013 – Became San Diego Health Connect

o UC San Diego transferred operational and oversight responsibility for the HIE to San Diego Health Connect—an independent, non-profit 501c3 organization.

Members:

- Kaiser Permanente
- Naval Medical Center of San Diego
- Rady Children's Hospital
- UC San Diego Health System
- Veterans Affairs
- Healtheway
- Borrego Community Health
- Clinicas de Salud del Pueblo
- Family Health Centers of San Diego
- Imperial Beach Health
- Indian Health Council
- La Maestra Community
- Mountain Health
- North County Health Services

- San Diego Family Care
- Vista Community Clinic
- St. Vincent de Paul
- San Ysidro Health
- Planned Parenthood
- Scripps Health
- Sharp HealthCare
- County of San Diego
- Pioneers Memorial Hospital
- El Centro Regional Medical Center
- Palomar Health
- Tri-City Medical Center

12

Participant Adoption As of 9/2/2014

Organization	# of Unique Lives	Transmit	Do Not Transmit	Emergency Only
Rady Children's Hospital -	470,580	206,842	8,665	5,943
University of California - San	378,217	442	35	0
Borrego Community Health	93,951	4	1,245	0
Neighborhood Healthcare	77,154	0	0	309
North County Health Services	67,334	0	1	0
San Ysidro Health Center	65,732	0	0	0
Vista Community Clinic	47,591	0	0	43,290
San Diego Family Care	35,072	99	1,964	96
Imperial Beach Health Center	18,367	1	27	12
La Maestra Community	17,727	0	3	9,914
Mountain Health	10,216	0	0	10,215
Planned Parenthood of the	1	0	1	0
San Diego Health Connect	1,276,76	0	0	0

HEALTH CONNECT
Better Information • Better Care

HIE Champions

o   Risk Manager – EHR and Meaningful Use Expert

o   Director of Nursing – HEDIS lead

o   Chief Information Officer

o   Clinic Managers

For patients seen at ED or other partners, message is sent through "Directed Exchange" to an Inbox

o Medical Records Lead staff checks Health Connect Inbox each morning for "Transition of Care" (TOC) messages

- Downloads new TOC's and then uploads to patient record in La Maestra's NextGen EHR

    → Generates a message for PCPs in their NextGen dashboard so they can monitor patient health, determine follow up

o HEDIS specialist (Medical Assistant with add'l training) checks Health Connect Inbox each day and calls patient to schedule a follow up visit with PCP at La Maestra

15

How HIE works at La Maestra CHC today

For patients who present at La Maestra, with no TOC in Inbox – access through "Query - based Exchange"

o PCP logs in to Health Connect portal, search for patient records or request from partner providers

o If patient didn't sign consent form at ED or other HIE partner, PCP may "Break the glass" to see their record – this is common scenario currently

o La Maestra receives small number of requests to send our patient records – will increase as more partners join HIE

Exchanging info outside of Regional HIE

o Pediatrician has been accessing Children's Hospital records for years through their own portal, uses this instead of HIE

o Some La Maestra providers also are employed at major hospital systems, where our patients go to ED or specialists - have direct access to their portals so don't need to worry about HIE consent

Patient Consent

o La Maestra created Consent form with 3 options

o Front Desk staff and PCP encourage patient to sign. Explains Purpose, Benefits, Risks

o La Maestra created a script for PCP to explain to patient

My Consent Choices (CHECK ONE):

I GIVE CONSENT FOR participating healthcare sites to share my unrestricted electronic health information through health information organization(s) who provide me any health care services, including emergency care.

I DENY CONSENT FOR participating healthcare sites to share any of my unrestricted electronic health information through health information organization(s) EXCEPT in the event of a medical emergency.

I DENY CONSENT FOR participating healthcare sites to share any of my electronic health information through health information organization(s) EVEN in the event of a medical emergency.

18

What data to share?

o Each HIE partner can choose or decide what information is transmitted vs. what is protected

o Potential for Patient harm: if a patient doesn't remember they received a medication that is considered "protected", another provider may prescribe it again, or a medication with potential for harmful interactions.

o La Maestra: "all or nothing" stance on info transmission However, we are only consenting from medical records for the HIE.

o One HIE hospital partner's consent process is opt out: patient has to formally ask to <u>not</u> share info to HIE - but they have some information protected that LM can't access

Delays in Availability of Records

o If Patient was seen by HIE partner the day before coming to La Maestra, we may only see labs, no formal note if other provider hasn't finished the documentation.

Different EHR systems

o With HIE partners using all different systems, costs are incurred for interfaces, staff time to download/upload, etc.