The Camden Coalition of Healthcare Providers Approach to Risk Stratified Care Management
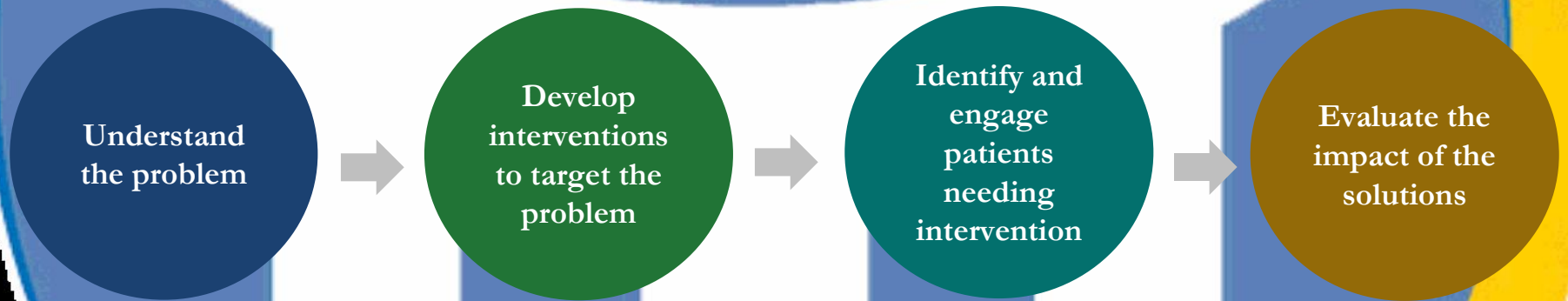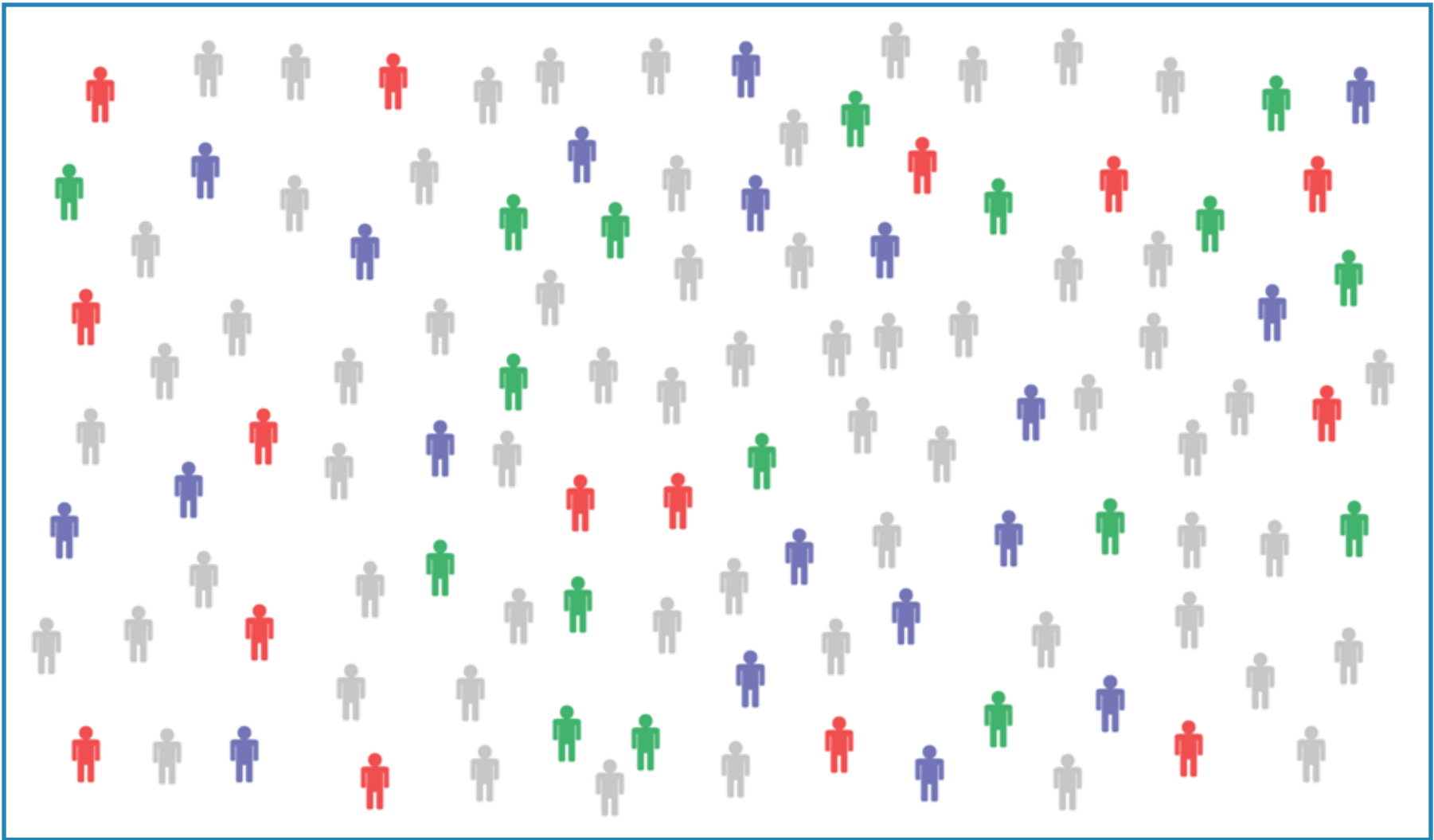
Presentation by:
Kennen S. Gross, PhD, MPH
Director, Research & Evaluation
Camden Coalition of Healthcare Providers

Hot Spotting

Hot Spotting: the ability to identify in a timely manner patients who are heavy users of the system and their patterns of use, so that targeted intervention and follow-up programs can be put in place to address their needs and change the existing, potentially ineffective, utilization pattern.
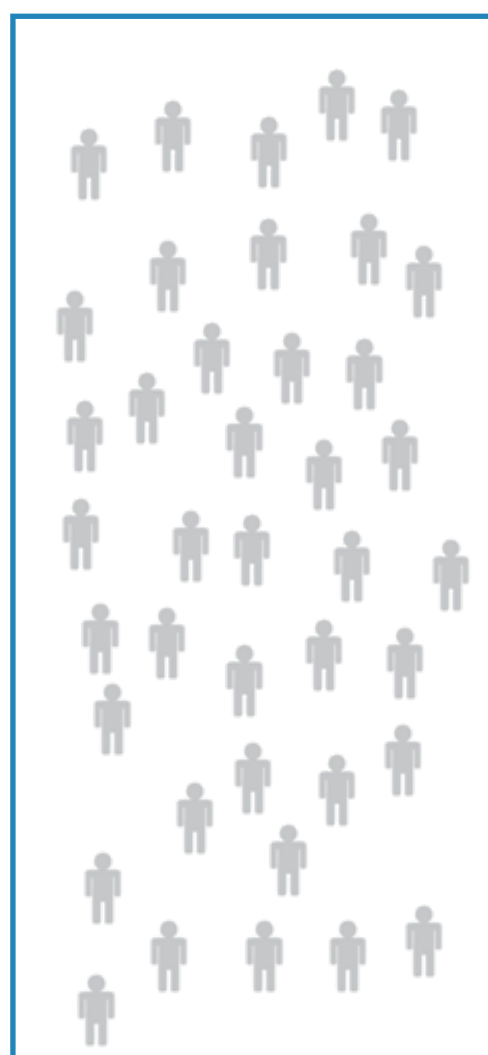
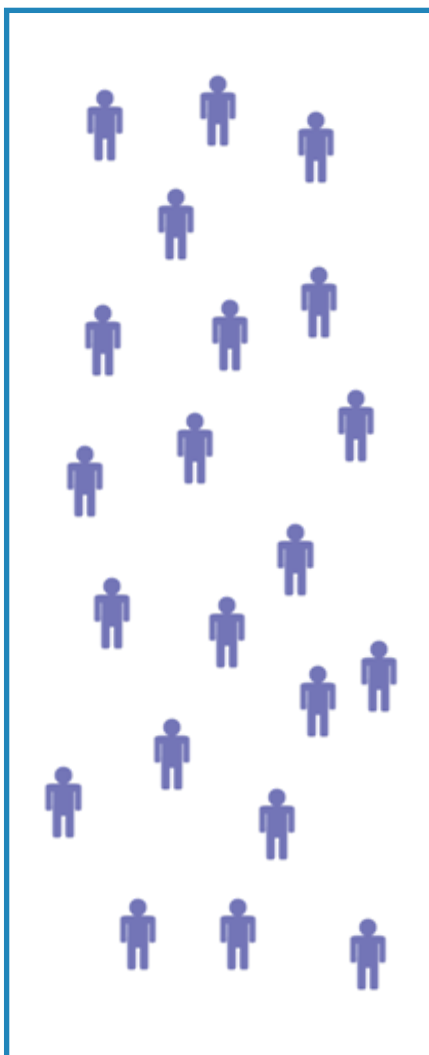Understand the problem → Develop interventions to target the problem → Identify and engage patients needing intervention → Evaluate the impact of the solutions

Diabetes   COPD   Multi-CC   No-CC
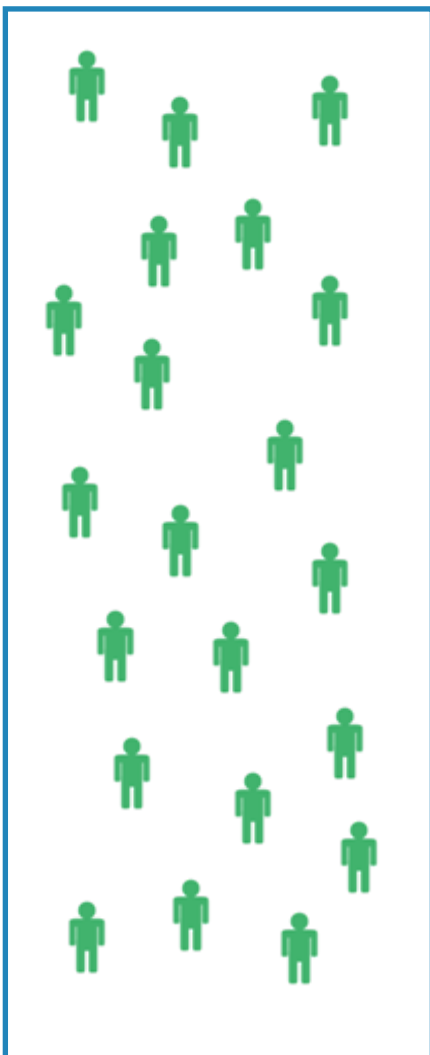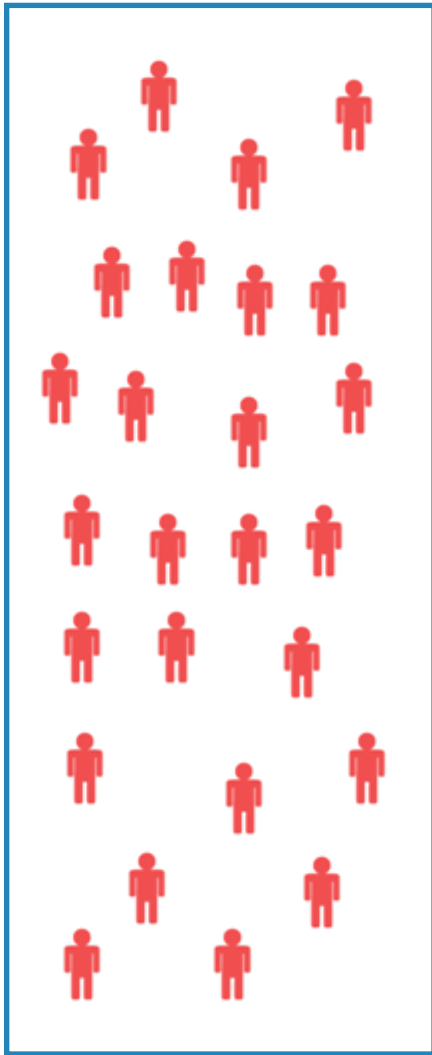
Diabetes   COPD   Multi-CC   No-CC

Traditional Intervention Paradigm
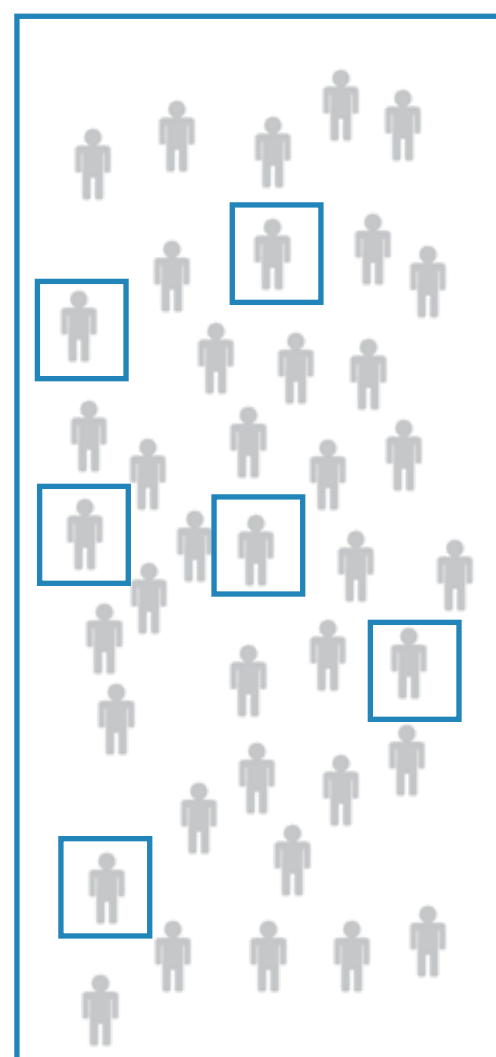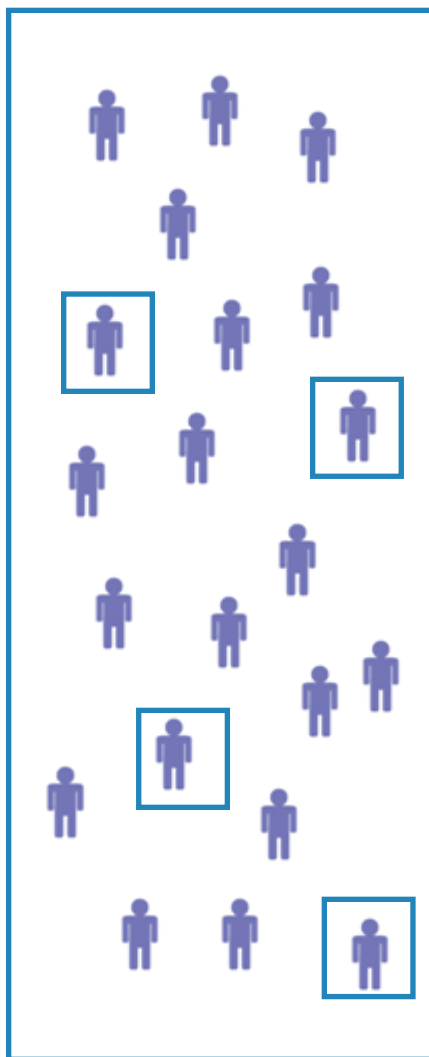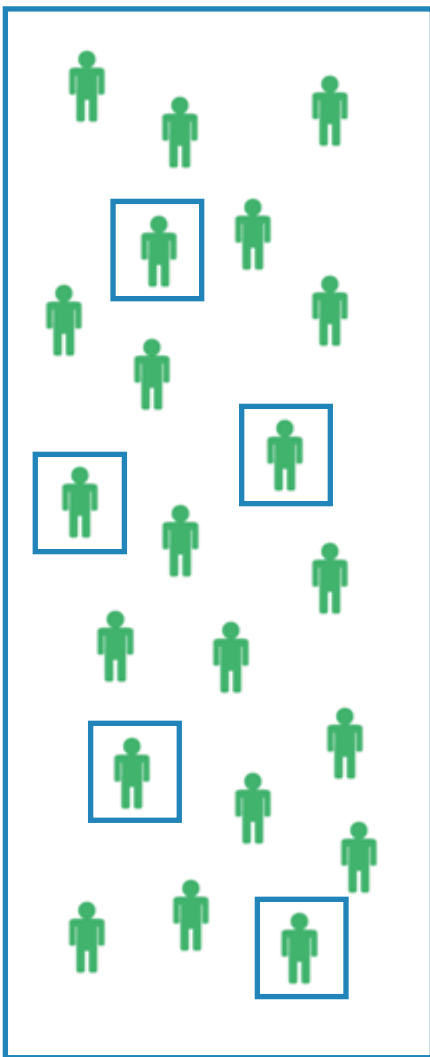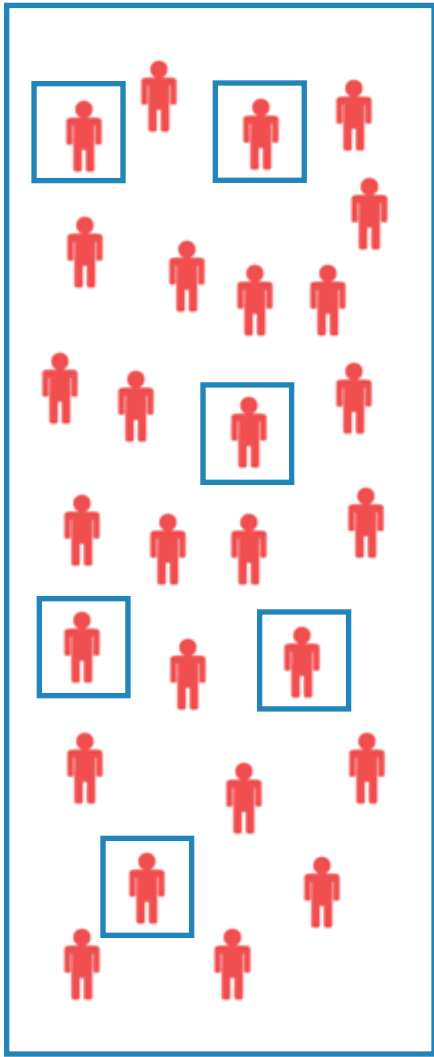
Diabetes   COPD   Multi-CC   No-CC   High Utilizer

Traditional Intervention Paradigm
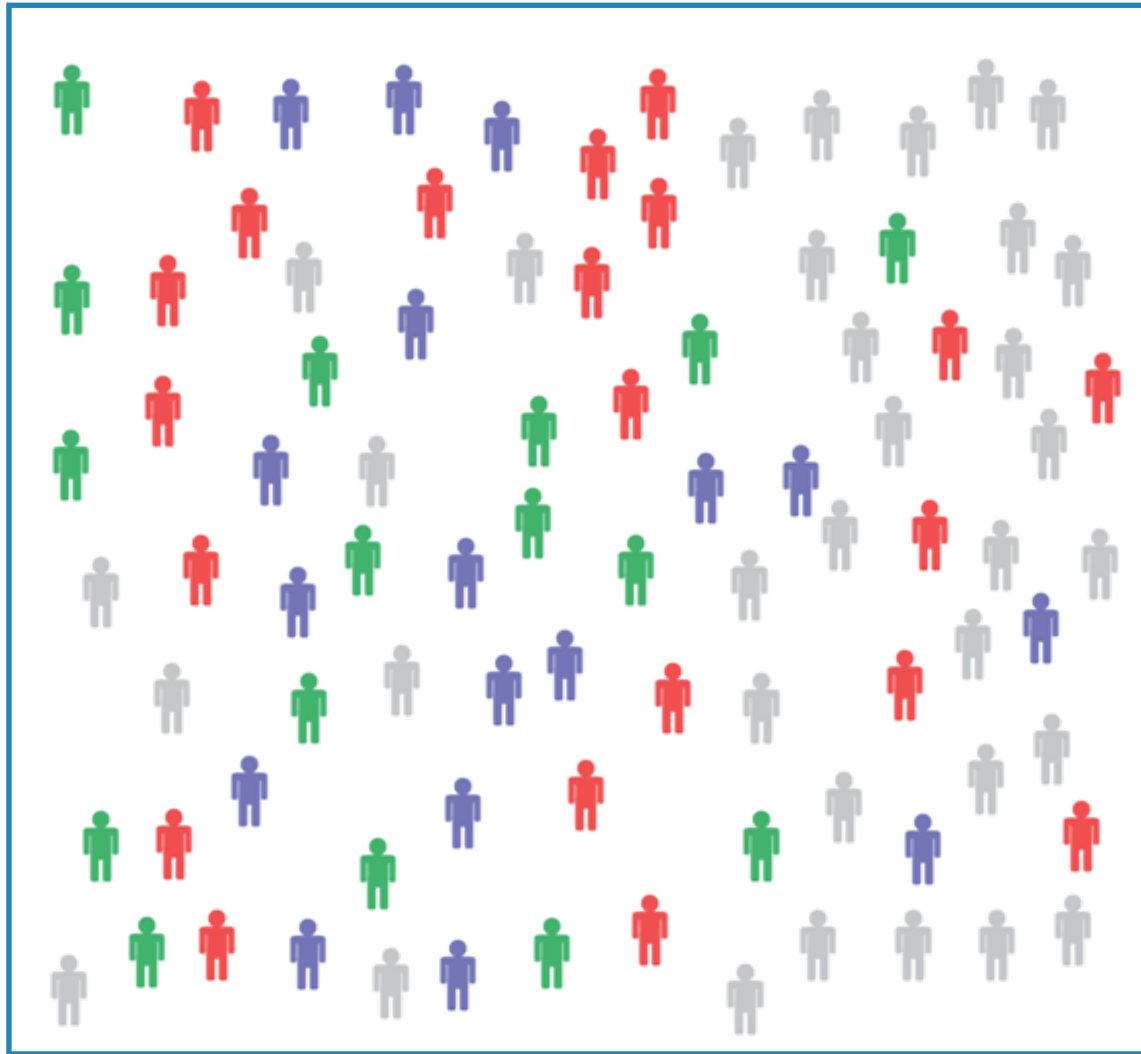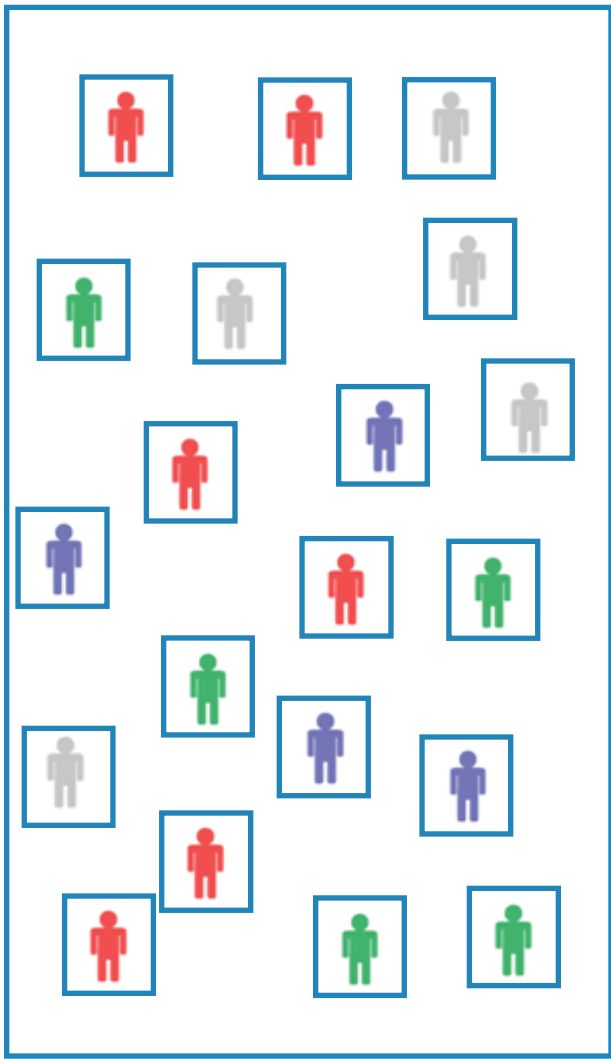
Diabetes   COPD   Multi-CC   No-CC   High Utilizer

Hotspotting Intervention Paradigm

CCHP Data Access Solution:
Camden Health Database

Yearly Clams Data
Data Use Agreements
IRB Agreement

Data processing/cleaning

Probabilistic matching

Geocoding
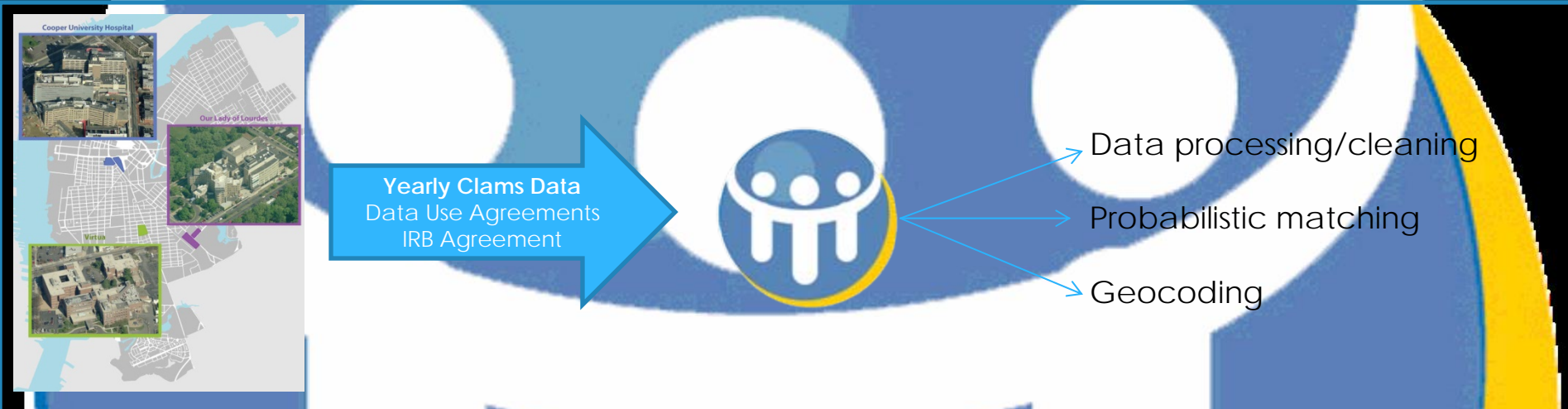
Camden Residents All-Payer Claims Longitudinal Dataset
- Demographics
- Inpatient and Emergency visits
- Diagnosis codes
- Charges/receipts
- Insurance

Methodology

Cluster analysis =
Patient Utilization Typologies
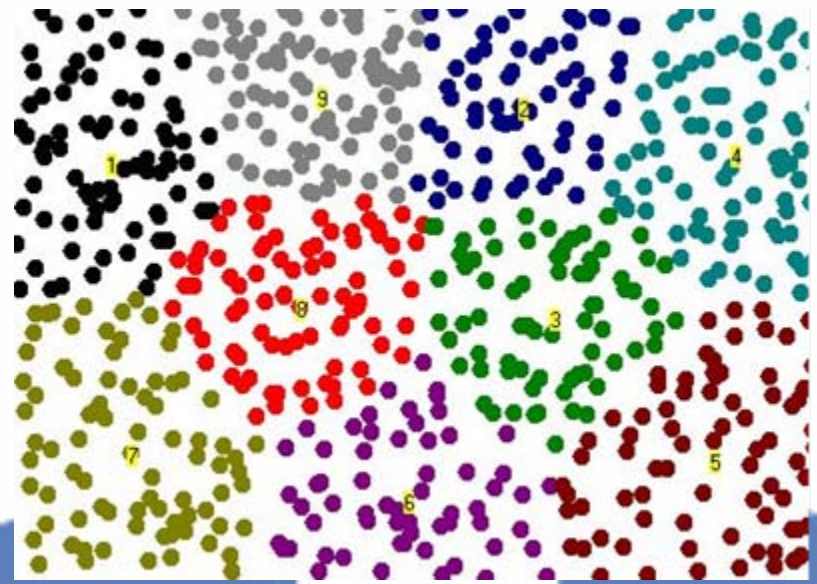
Cluster Analysis Results

Cluster	% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
Low Utilization	36.9%	16.7%	0.0%	0.0%	4.1%	3.9%	0.0%	$29,459,067	$3,216,749
Average Utilization	20.3%	21.2%	0.0%	0.0%	5.0%	4.7%	0.0%	$35,843,429	$3,867,264

Cluster	% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
High ED Utilizers	10.1%	23.8%	3.0%	1.7%	6.5%	6.6%	0.0%	$46,579,465	$5,505,723
Borderline ED/IP Utilizers	7.9%	3.3%	8.1%	7.5%	7.8%	7.7%	0.0%	$56,204,358	$6,439,403
Moderate ED Utilizers	7.8%	9.5%	6.2%	3.7%	6.3%	6.5%	0.0%	$45,433,623	$5,391,079
Outlier ED Utilizers	2.1%	11.6%	2.5%	1.7%	3.9%	3.4%	.3%	$28,203,522	$2,829,333

Cluster	% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
Borderline IP/ED Utilizers	11.3%	6.6%	41.9%	34.9%	27.3%	27.3%	0.0%	$196,526,193	$22,735,172
Moderate Inpatient Utilizers	2.8%	3.6%	24.5%	22.5%	18.5%	20.4%	75.9%	$133,209,990	$16,957,202
High Inpatient Utilizers	.8%	1.5%	13.0%	27.5%	20.0%	18.8%	23.0%	$144,148,652	$15,652,705
Extreme Utilizers	.1%	2.1%	.7%	.5%	.7%	.6%	.9%	$5,192,345	$537,555
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	$720,800,645	$83,132,186

High ED Utilizers
2,854 patients (10%)

| Mean # ED visits	Mean # IP visits	Mean total LOS	Mean % of all unique primary ICD classified as chronic	Mean % of IP that are 60 day readmissions	Mean total charges	Mean total receipts	Median Age
5.24	.09	.25	8%	0%	$16,321	$1,929	31

% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
10.1%	23.8%	3.0%	1.7%	6.5%	6.6%	0.0%	$46,579,465	$5,505,723

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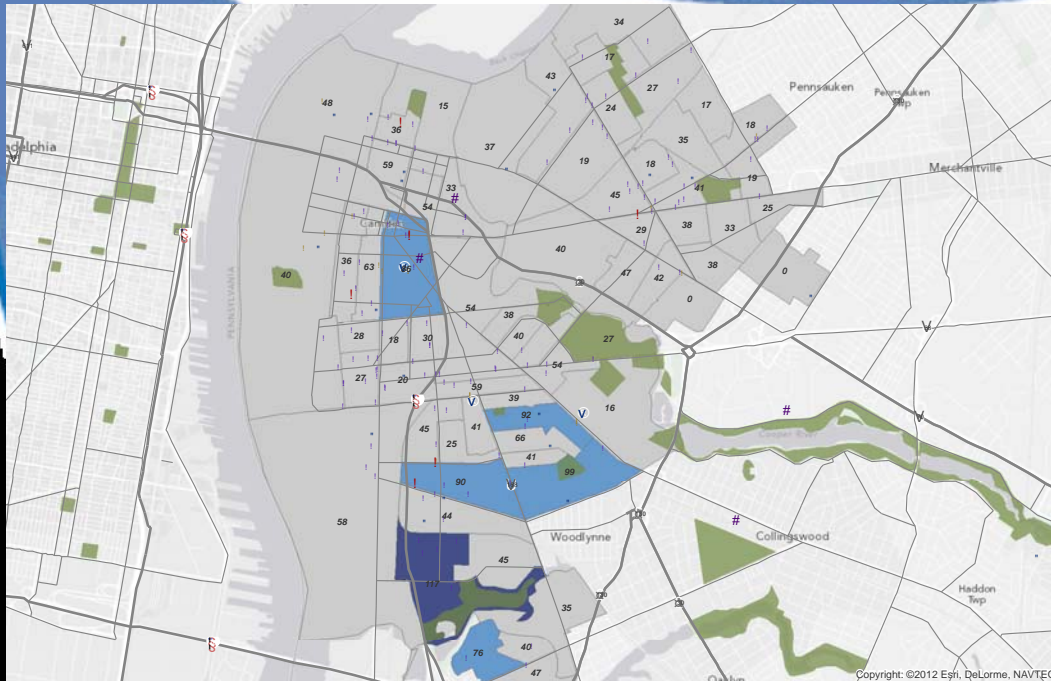
	Patients	Percent
URIN TRACT INFECTION NOS	382	2.8
ABDOM PAIN NOS (Begin 1994)	319	2.4
ACUTE PHARYNGITIS	302	2.2
BACKACHE NOS	277	2.0
NO PROC/PATIENT DECISION	265	2.0
HEADACHE	224	1.7
ACUTE URI NOS	215	1.6
CHEST PAIN NOS	214	1.6
ABDOM PAIN NEC (Begin 1994)	190	1.4
VAGINITIS NOS	189	1.4

Moderate Inpatient Utilizers
786 patients (2.8%)

Mean # ED visits	Mean # IP visits	Mean total LOS	Mean % of all unique primary ICD classified as chronic	Mean % of IP that are 60 day readmissions	Mean total charges	Mean total receipts	Median Age
2.91	2.72	12.15	32%	49%	$169,478	$21,574	53

% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
2.8%	3.6%	24.5%	22.5%	18.5%	20.4%	75.9%	$133,209,990	$16,957,202

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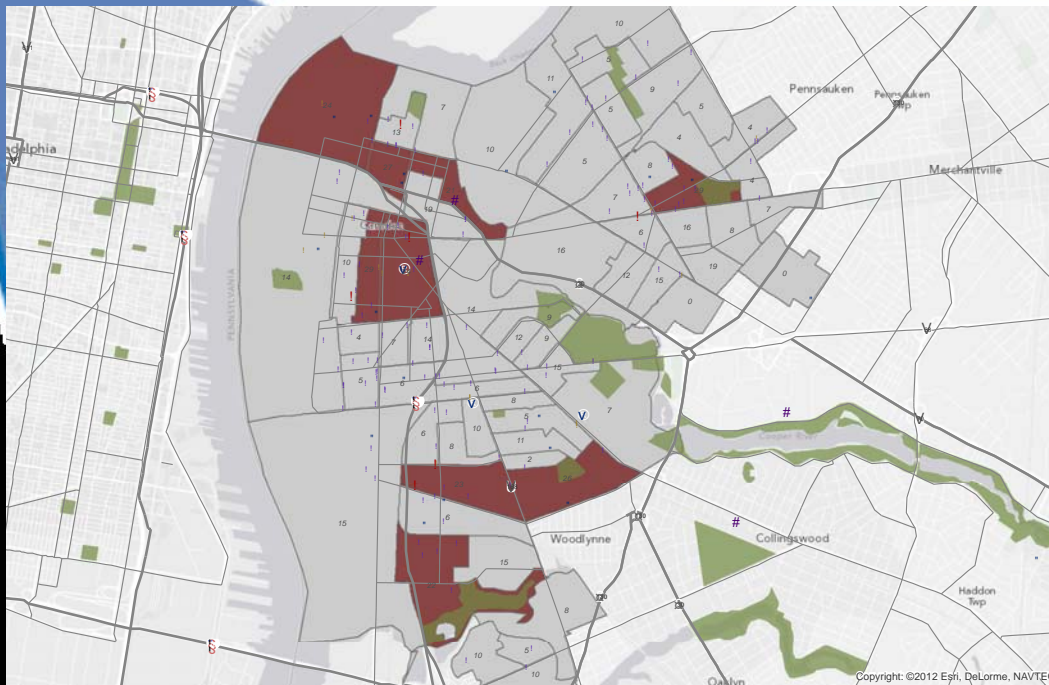
	Patients	Percent
CHEST PAIN NOS	74	2.0
URIN TRACT INFECTION NOS	65	1.8
SHORTNESS OF BREATH (Begin 1998)	56	1.5
RESPIRATORY ABNORM NEC	53	1.5
NO PROC/PATIENT DECISION	51	1.4
ABDOM PAIN NOS (Begin 1994)	50	1.4
PNEUMONIA ORGANISM NOS	50	1.4
CEREBR ART OCCLUS NOS W/ INFARCT (Begin 19	40	1.1
CHEST PAIN NEC	40	1.1
ACUTE RENAL FAILURE NOS	38	1.0

High Inpatient Utilizers
215 patients (1%)

Mean # ED visits	Mean # IP visits	Mean total LOS	Mean % of all unique primary ICD classified as chronic	Mean % of IP that are 60 day readmissions	Mean total charges	Mean total receipts	Median Age
4.48	5.33	54.71	34%	55%	$673,592	$73,143	57

% total	% total ED	% total IP	% total LOS	% total charges	% total receipts	% total 60 readmits	Total charges	Total receipts
.8%	1.5%	13.0%	27.5%	20.0%	18.8%	23.0%	$144,148,652	$15,652,705

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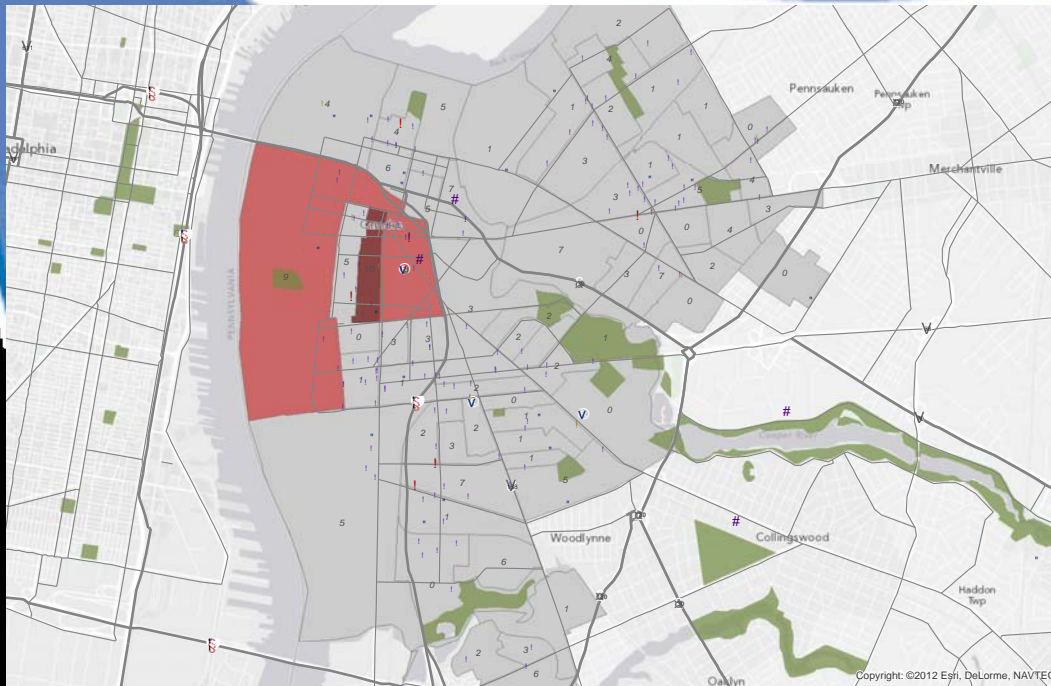
	Patients	Percent
RESPIRATORY ABNORM NEC	34	2.2
CHEST PAIN NOS	29	1.9
SHORTNESS OF BREATH (Begin 1998)	28	1.8
REHABILITATION PROC NEC	26	1.7
ABDOM PAIN NOS (Begin 1994)	25	1.6
SEPTICEMIA NOS	23	1.5
ACUTE RENAL FAILURE NOS	21	1.4
URIN TRACT INFECTION NOS	21	1.4
PNEUMONIA ORGANISM NOS	19	1.2
ACUTE ON CHRONIC SYSTOLIC HEART FAILR(Begi	17	1.1

CCHP Data Access Solution:
Camden Health Information Exchange

Web based HIE system

Daily HL-7 Feeds → HIE Vendor → Daily Data Share → Customized data cleaning and processing
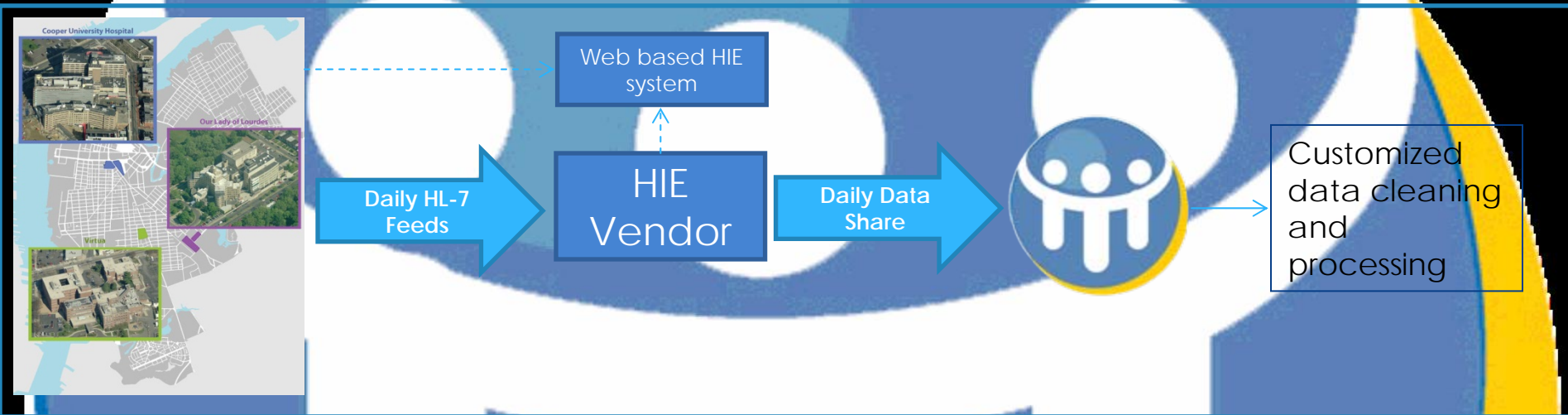
HIE Daily Report
- List of patients currently in hospital with 2+IP and/or 6+ ED in last 6 months
- CCHP care teams review cases
- Enroll patients in Care Management / Care Transitions program before discharge

Risk Stratification Workflow

Identify
- HIE daily admissions data
- Access to medical charts
- Triage tool

Step 1: Identify patients with 2+ inpatient visits in last 6 months

Recent Admissions for High Utilizers

Facility	Days Since Last	Inp	ED	Name	dob	age	sex
yesterday							
OLOL	23	5	2			87	M
OLOL	47	5	1			55	M
OLOL	14	3	8			55	M
Cooper	6	2	2			46	F
Cooper	96	2	2			31	F
Cooper	48	2	1			52	F
Cooper	149	2				63	F
Cooper	155	2				61	M
Cooper	67	2				65	M
2 days ago							
Cooper	25	6	1			66	F
OLOL	7	5				54	M
OLOL	32	3	6			37	F
OLOL	52	3	3			53	F
Cooper	14	3	1			80	F
OLOL	109	3				69	M
OLOL	16	3				72	M
Cooper	8	2	3			61	M
Cooper	102	2	1			68	F
Cooper	134	2				58	M
OLOL	160	2				27	F
Cooper	21	2				86	M
3 days ago							
OLOL	34	4	4			61	M
Cooper	9	3	4			43	F
Cooper	34	3	3			60	F
Cooper	93	3	1			21	M
Cooper	44	2	3			75	M
Cooper	71	2				51	F
4 days ago							
Cooper	34	3	8			53	F
Cooper	3	3	2			51	F
OLOL	175	2	3			19	F

Risk Stratification Workflow

Identify
- HIE daily admissions data
- Access to medical charts
- Eligibility

Assign
- Flexible rule-out criteria

Risk Stratification Workflow

Identify
- HIE daily admissions data
- Access to medical charts
- Eligibility

Assign
- PCP-focused assignment
- Increase relationship building with practices

Stratify
- Bedside outreach
- Risk Tool administration

HIE Admissions Flag:
- 2+ hospital admissions < 6 months

Triage:
- In-depth analysis of medical record to complete triage tool

Flexible Rule-Out Criteria:
- Uninsured
- Discharged prior to triage (no longer in hospital)
- Over 80 years old
- Non-Camden PCP

Identify Risk Factors:
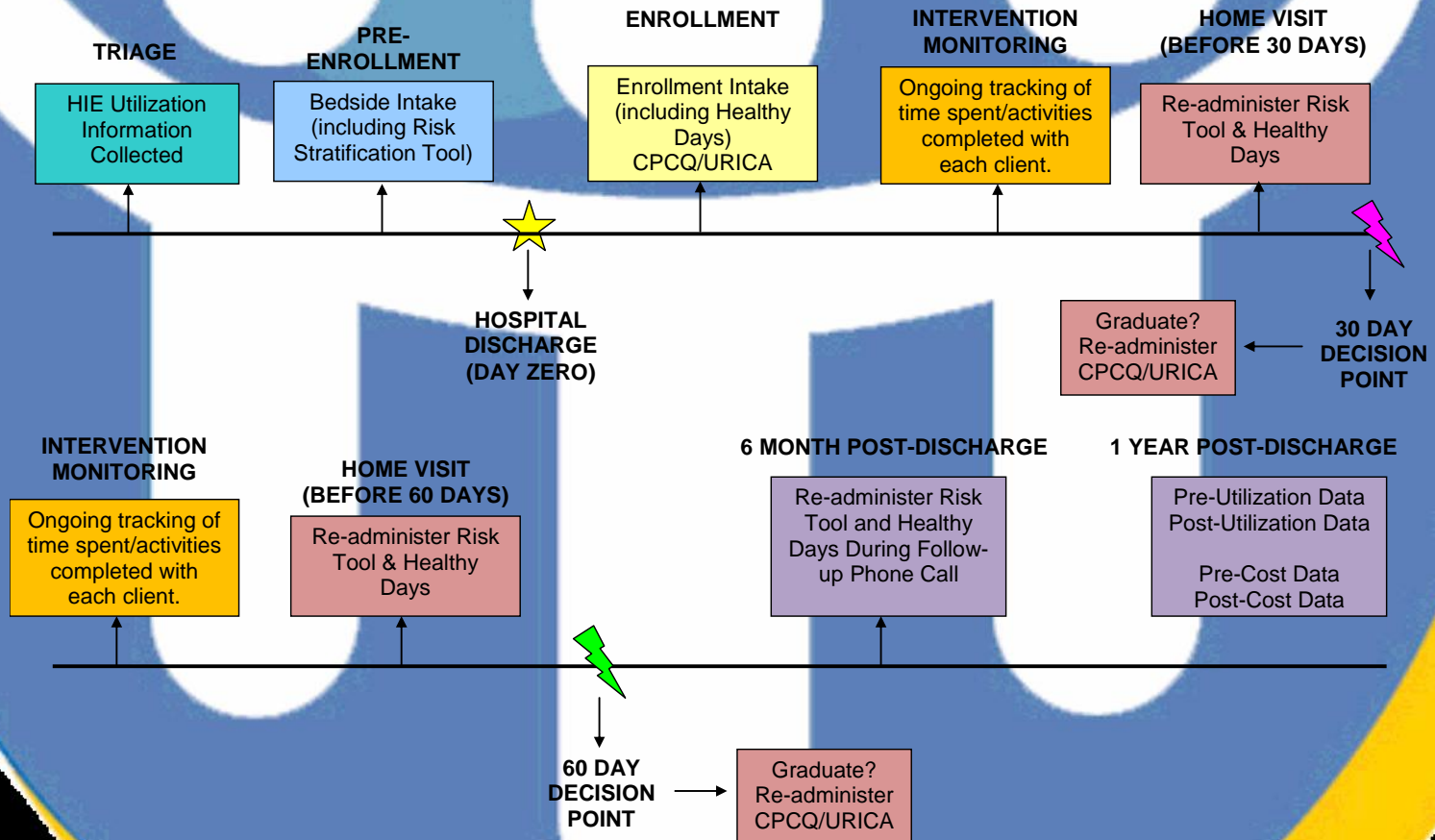- Behavioral health issues
- Language barriers
- Homelessness
- Poor Self-Rating of Health
- Mobility limitations
- Lack of social supp...

"Good" Data collection = Design

Care Management Intervention – Data Collection Timeline

TRIAGE

HIE Utilization Information Collected

PRE-ENROLLMENT

Bedside Intake (including Risk Stratification Tool)

ENROLLMENT

Enrollment Intake (including Healthy Days) CPCQ/URICA

INTERVENTION MONITORING

Ongoing tracking of time spent/activities completed with each client.

HOME VISIT (BEFORE 30 DAYS)

Re-administer Risk Tool & Healthy Days

HOSPITAL DISCHARGE (DAY ZERO)

Graduate? Re-administer CPCQ/URICA

30 DAY DECISION POINT

INTERVENTION MONITORING

Ongoing tracking of time spent/activities completed with each client.

HOME VISIT (BEFORE 60 DAYS)

Re-administer Risk Tool & Healthy Days

6 MONTH POST-DISCHARGE

Re-administer Risk Tool and Healthy Days During Follow-up Phone Call

1 YEAR POST-DISCHARGE

Pre-Utilization Data Post-Utilization Data

Pre-Cost Data Post-Cost Data

60 DAY DECISION POINT

Graduate? Re-administer CPCQ/URICA

"Good" Data collection = Design + Technology
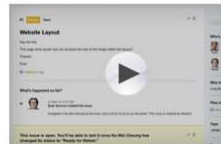
Thank you for your time
Questions/comments please contact me at
ken@camdenhealth.org