Children's Primary Care Medical Group, Inc.

1:40 PM

Option C

TCPi Learning Collaborative: Leveraging Your Data

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Children's Primary Care Medical Group

RADY CHILDREN'S HEALTH NETWORK

An Integrated Delivery System

Hospital

Primary Care

Specialty

IPA

RADY CHILDREN'S HOSPITAL

SAN DIEGO

524 BEDS

Largest children's hospital in California. Sixth largest in the country (based on admissions).

900 Physicians

1500 Registered Nurses

19,000 Admissions

92,000 Emergency Dept. visits

Epic EHR

Live since 2009

Rady Children's Hospital San Diego

Children's Primary Care Medical Group, Inc.

CHILDREN'S PRIMARY CARE MEDICAL GROUP

(CPCMG)

22 Sites

Throughout San Diego and southern Riverside counties

114 MDs & NPs

232,000 Patients

466,000 outpatients visits

Epic EHR

Live since 2009

AGENDA

1 **TCPi**
Transforming Clinical Practice Initiative

2 **BIG DATA**
The solution lies somewhere within

3 **DEFINE THE PROBLEM**
Identify a specific medical condition you want to affect

4 **TAKE ACTION**
Use the obtained knowledge to improve health

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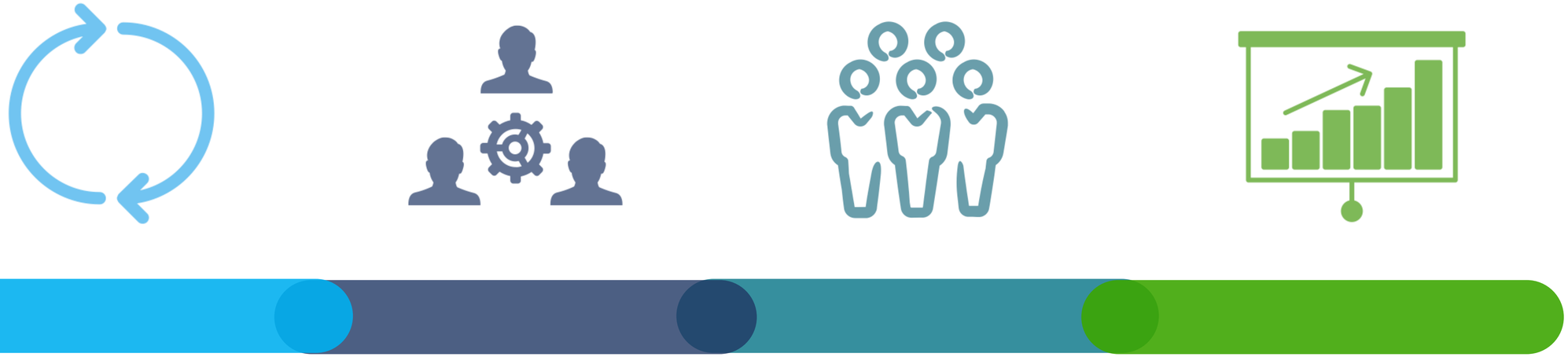
TRANSFORMING CLINICAL PRACTICE INITIATIVE



Payment and Practice Reform

Primary care and specialty care

Care Coordination

Providers of services and suppliers

Community-Based Health Teams

Support chronic care management

Improved Quality and Reduced Cost

Support practice transformation

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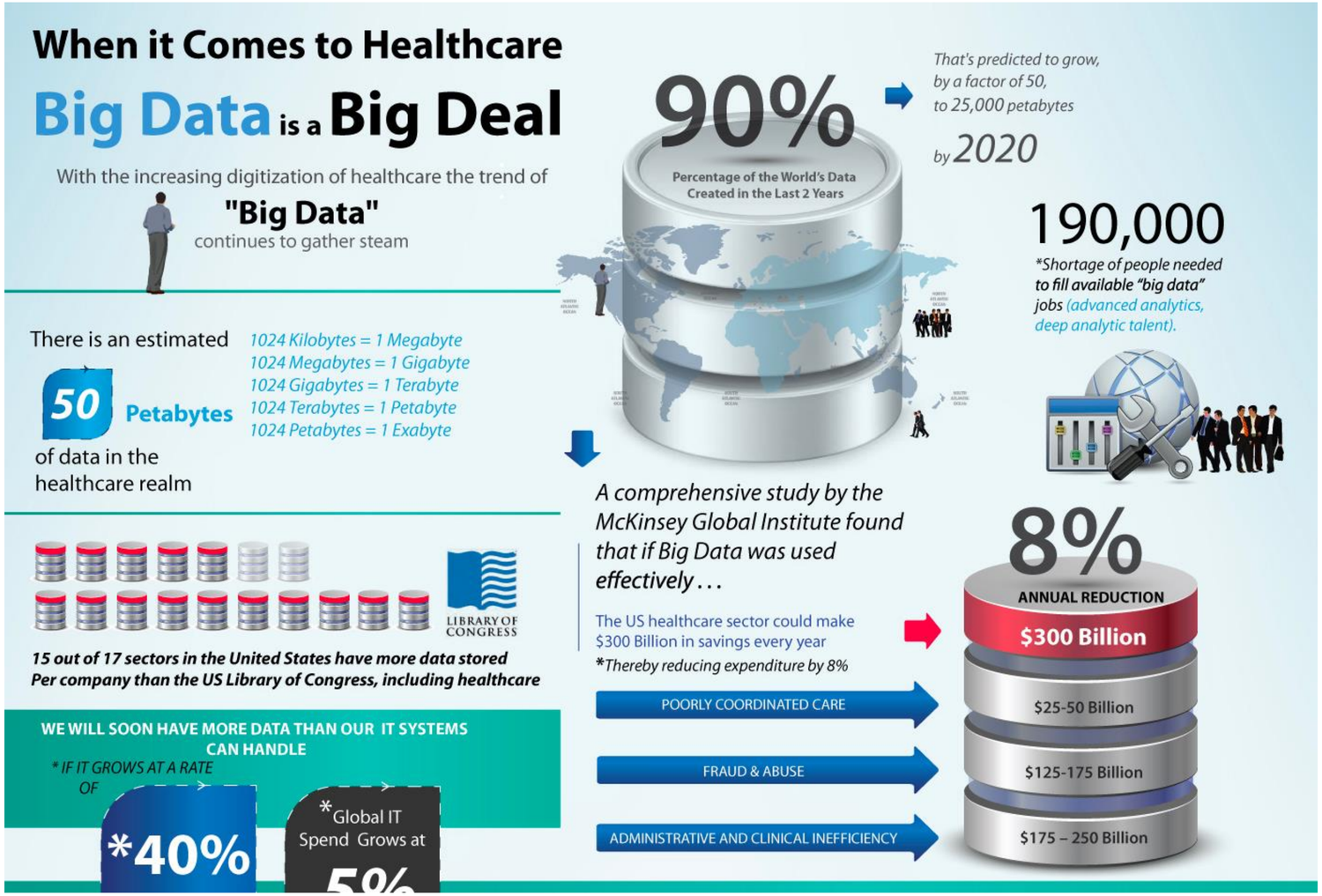
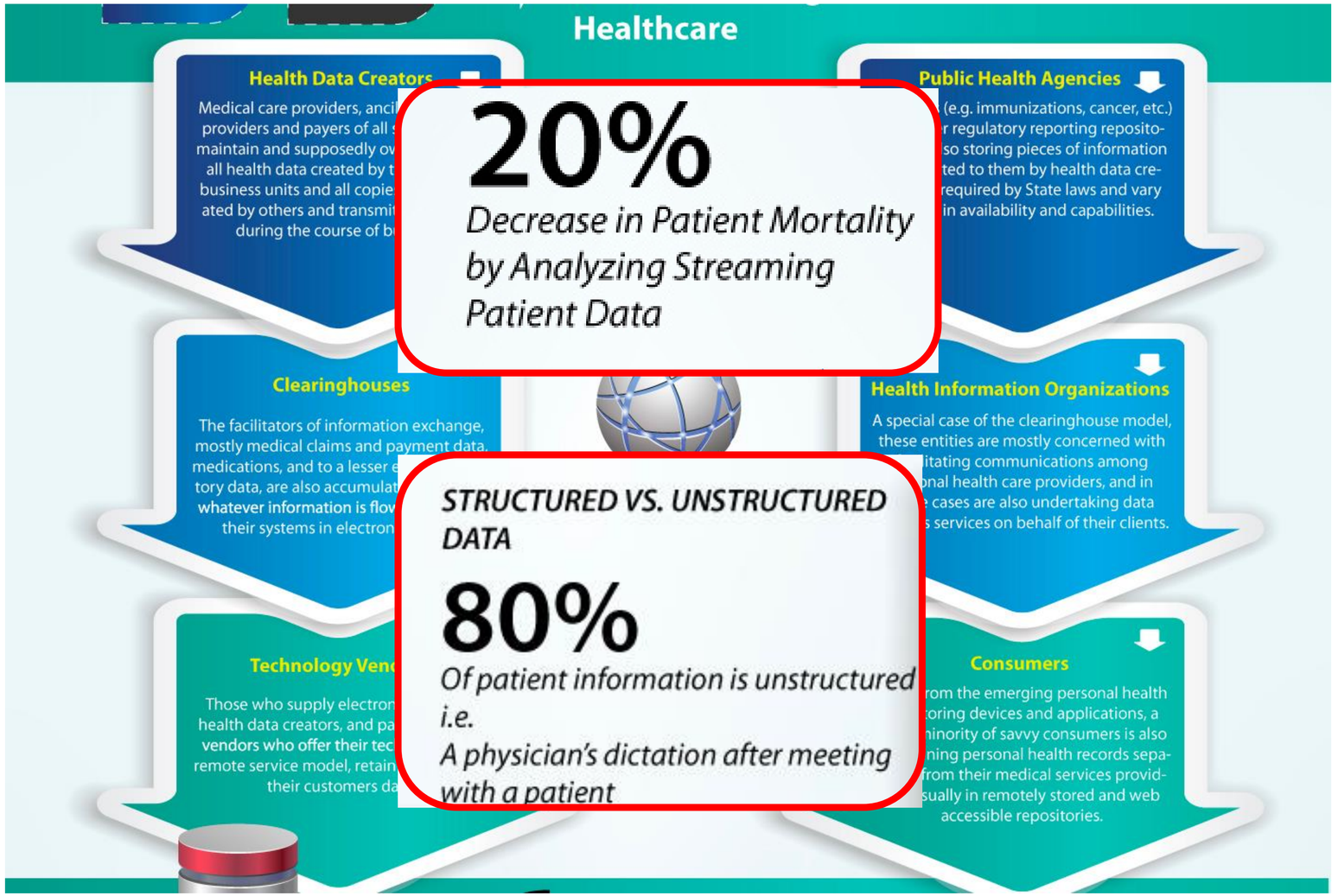
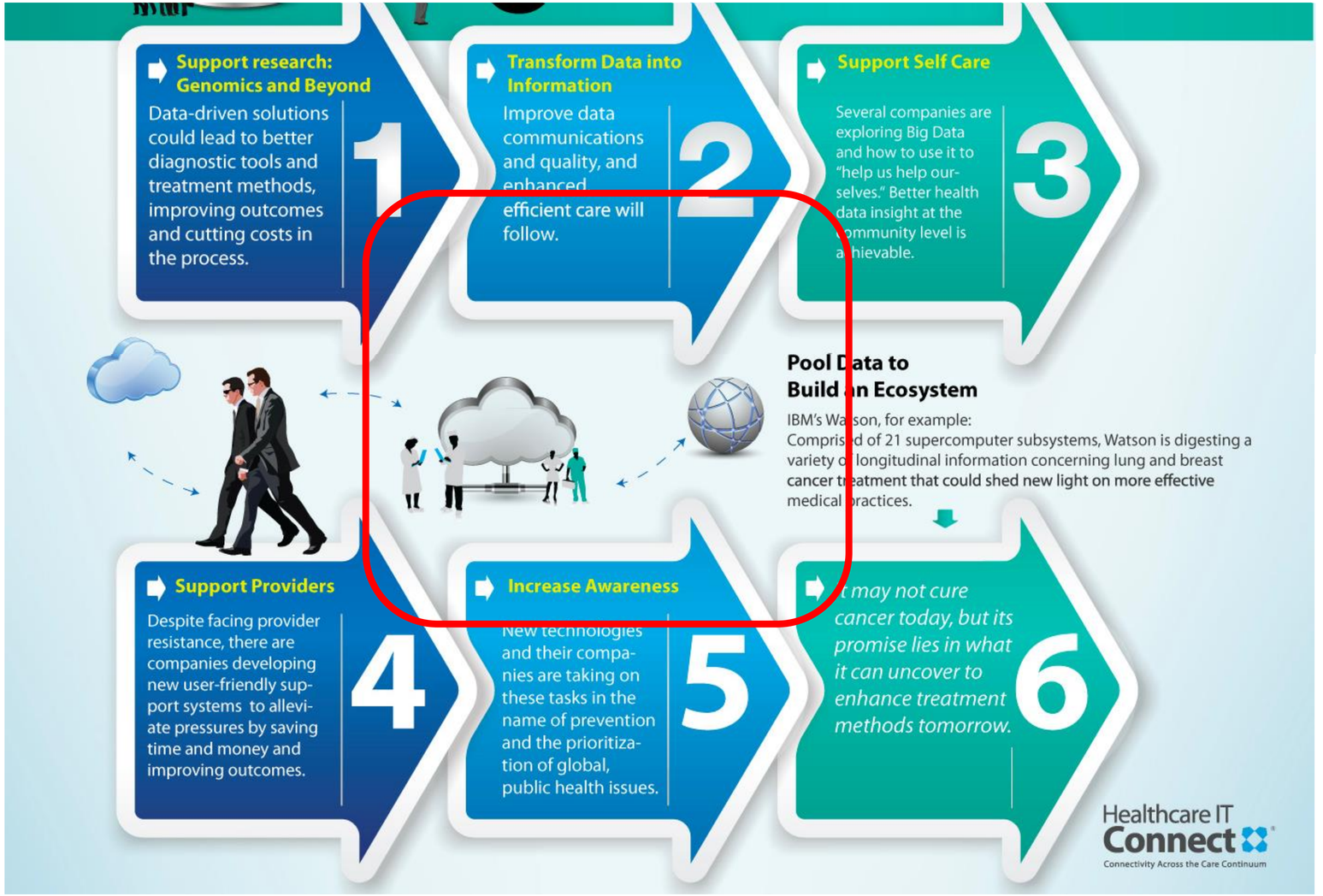

When it Comes to Healthcare
Big Data is a Big Deal
With the increasing digitization of healthcare the trend of
"Big Data"
continues to gather steam
There is an estimated
50 Petabytes
of data in the healthcare realm
1024 Kilobytes = 1 Megabyte
1024 Megabytes = 1 Gigabyte
1024 Gigabytes = 1 Terabyte
1024 Terabytes = 1 Petabyte
1024 Petabytes = 1 Exabyte
LIBRARY OF CONGRESS
15 out of 17 sectors in the United States have more data stored Per company than the US Library of Congress, including healthcare
WE WILL SOON HAVE MORE DATA THAN OUR IT SYSTEMS CAN HANDLE
* IF IT GROWS AT A RATE OF
*40%
*Global IT Spend Grows at
5%
90%
Percentage of the World's Data Created in the Last 2 Years
That's predicted to grow, by a factor of 50, to 25,000 petabytes by 2020
190,000
*Shortage of people needed to fill available "big data" jobs (advanced analytics, deep analytic talent).
A comprehensive study by the McKinsey Global Institute found that if Big Data was used effectively . . .
The US healthcare sector could make $300 Billion in savings every year
*Thereby reducing expenditure by 8%
POORLY COORDINATED CARE
FRAUD & ABUSE
ADMINISTRATIVE AND CLINICAL INEFFICIENCY
8%
ANNUAL REDUCTION
$300 Billion
$25-50 Billion
$125-175 Billion
$175 – 250 Billion

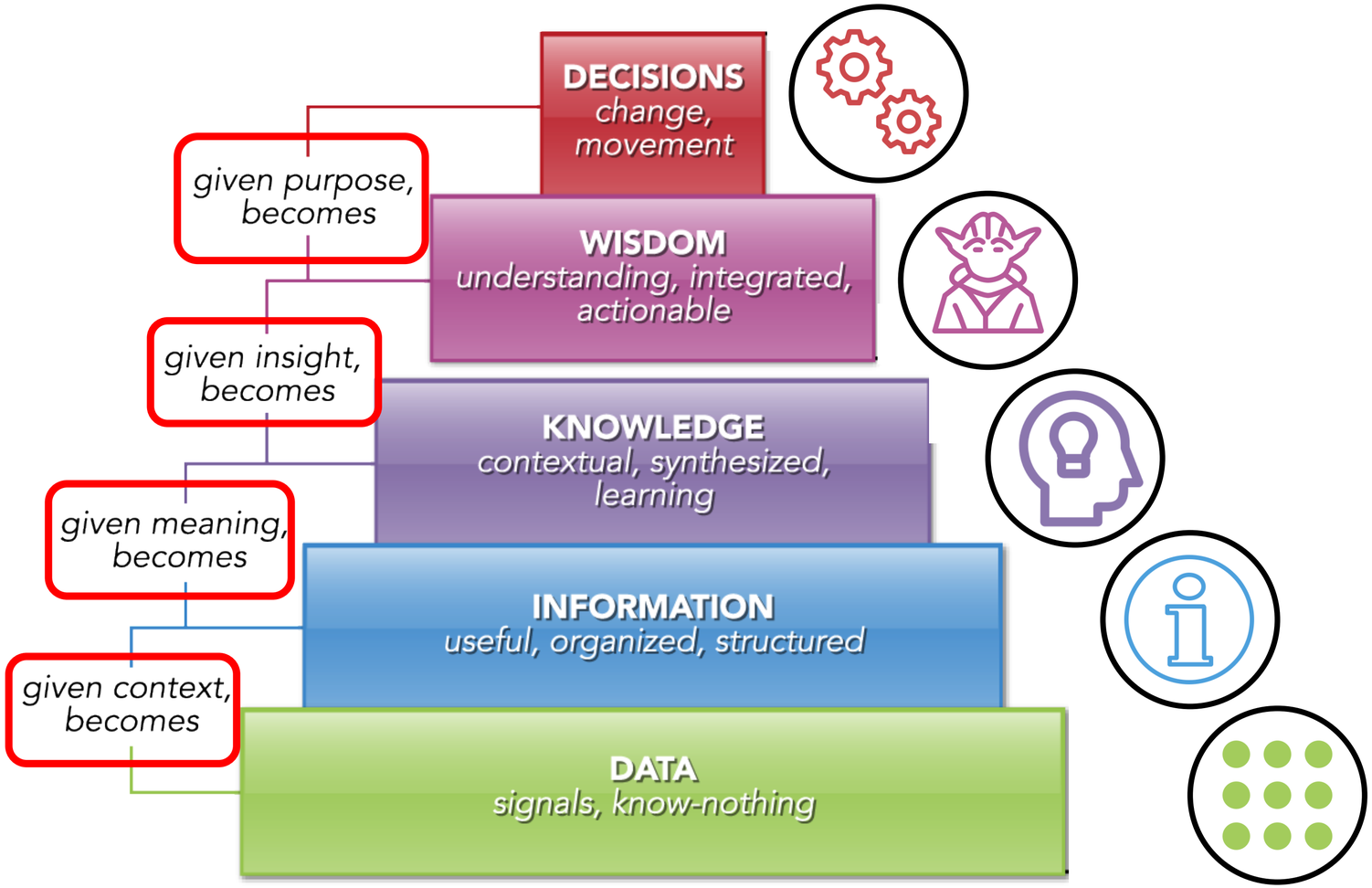
BIG DATA


Healthcare
Health Data Creators
Medical care providers, anci
providers and payers of all
maintain and supposedly ov
all health data created by t
business units and all copie
ated by others and transmit
during the course of b
Public Health Agencies
(e.g. immunizations, cancer, etc.)
r regulatory reporting reposito-
so storing pieces of information
ted to them by health data cre-
required by State laws and vary
in availability and capabilities.
20%
Decrease in Patient Mortality by Analyzing Streaming Patient Data
Clearinghouses
The facilitators of information exchange, mostly medical claims and payment data, medications, and to a lesser e
tory data, are also accumulat
whatever information is flov
their systems in electron
Health Information Organizations
A special case of the clearinghouse model, these entities are mostly concerned with
itating communications among
onal health care providers, and in
cases are also undertaking data
services on behalf of their clients.
STRUCTURED VS. UNSTRUCTURED DATA
80%
Of patient information is unstructured
i.e.
A physician's dictation after meeting with a patient
Technology Ven
Those who supply electron
health data creators, and pa
vendors who offer their tec
remote service model, retain
their customers da
Consumers
rom the emerging personal health
oring devices and applications, a
inority of savvy consumers is also
ning personal health records sepa-
from their medical services provid-
sually in remotely stored and web
accessible repositories.

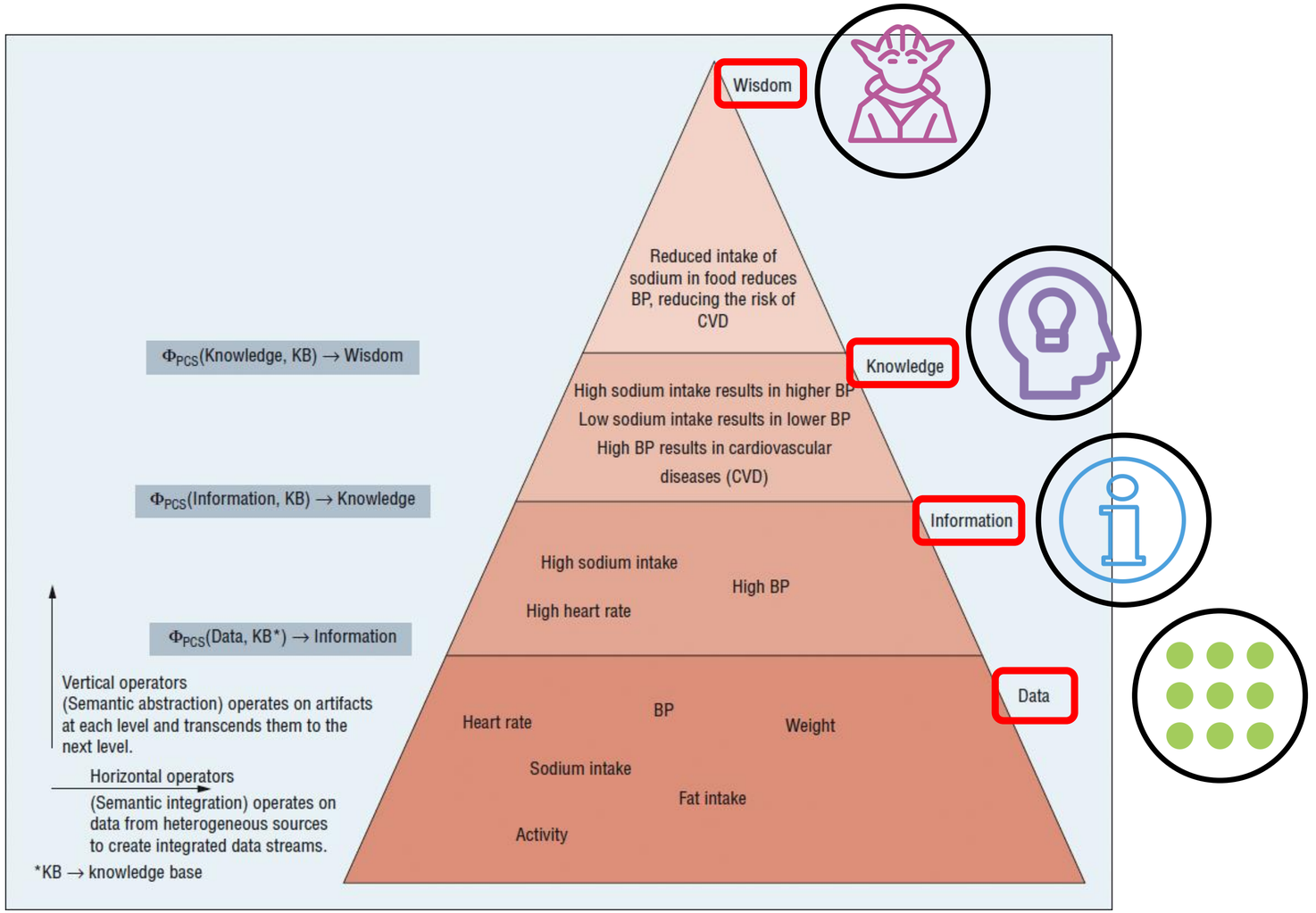
BIG DATA


Support research: Genomics and Beyond
Data-driven solutions could lead to better diagnostic tools and treatment methods, improving outcomes and cutting costs in the process.
1
Transform Data into Information
Improve data communications and quality, and enhanced
efficient care will follow.
2
Support Self Care
Several companies are exploring Big Data and how to use it to "help us help ourselves." Better health data insight at the community level is achievable.
3
Pool Data to Build an Ecosystem
IBM's Watson, for example:
Comprised of 21 supercomputer subsystems, Watson is digesting a variety of longitudinal information concerning lung and breast cancer treatment that could shed new light on more effective medical practices.
Support Providers
Despite facing provider resistance, there are companies developing new user-friendly support systems to alleviate pressures by saving time and money and improving outcomes.
4
Increase Awareness
New technologies and their companies are taking on these tasks in the name of prevention and the prioritization of global, public health issues.
5
t may not cure cancer today, but its promise lies in what it can uncover to enhance treatment methods tomorrow.
6
Healthcare IT Connect
Connectivity Across the Care Continuum

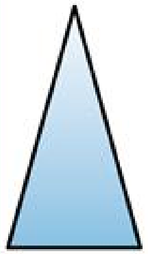
BIG DATA


DECISIONS
change, movement
given purpose, becomes
WISDOM
understanding, integrated, actionable
given insight, becomes
KNOWLEDGE
contextual, synthesized, learning
given meaning, becomes
INFORMATION
useful, organized, structured
given context, becomes
DATA
signals, know-nothing

BIG DATA


Wisdom
Reduced intake of sodium in food reduces BP, reducing the risk of CVD
Knowledge
High sodium intake results in higher BP
Low sodium intake results in lower BP
High BP results in cardiovascular diseases (CVD)
Information
High sodium intake
High BP
High heart rate
Data
Heart rate
BP
Weight
Sodium intake
Fat intake
Activity
ΦPCS(Knowledge, KB) → Wisdom
ΦPCS(Information, KB) → Knowledge
ΦPCS(Data, KB*) → Information
Vertical operators
(Semantic abstraction) operates on artifacts at each level and transcends them to the next level.
Horizontal operators
(Semantic integration) operates on data from heterogeneous sources to create integrated data streams.
*KB → knowledge base

BIG DATA



Step	Description	Value Added
Wisdom	Knowledge + Insight + Action	Actionable intelligence: establish and reach measurable goals; wiser decisions
Knowledge	Information + Meaning	Connections: comparison, consequences, conversations
Information	Data + Context	Interpretation: contextualized, categorized, calculated, condensed
Data	Foundation for information	Observation: discrete, objective facts, figures, etc.

WHAT DATA DO WE COLLECT?

UNstructured Data

Progress Notes

Radiology Images

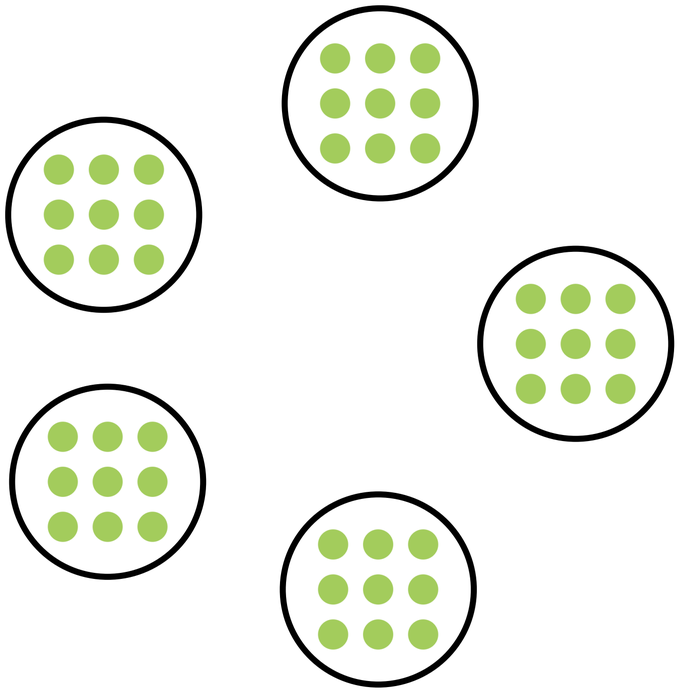
Radiology Reports

Audio Dictations

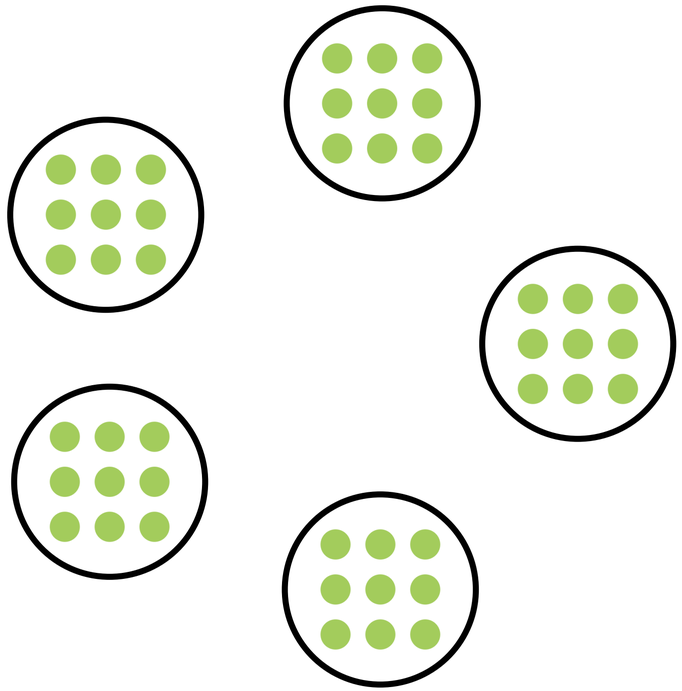
Scanned Documents

WHAT DATA DO WE COLLECT?

Structured Data



- Chief Complaint
- Vital Signs
- Past Medical History
- Social History
- Encounter Diagnosis
- Problem List
- Vaccine Record
- Date of Service
- Demographics
- Lab Result



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DEFINE THE PROBLEM

- Prevent new illness

“I want to prevent influenza infection.

- Prevent morbidity from known illness
- Decrease cost of care

“I want to prevent influenza infection in patients with asthma.”

- Meet recommended guidelines

“I want to prevent influenza infection in patients with asthma who live in the region of a current influenza epidemic.”

MINE THE DATA

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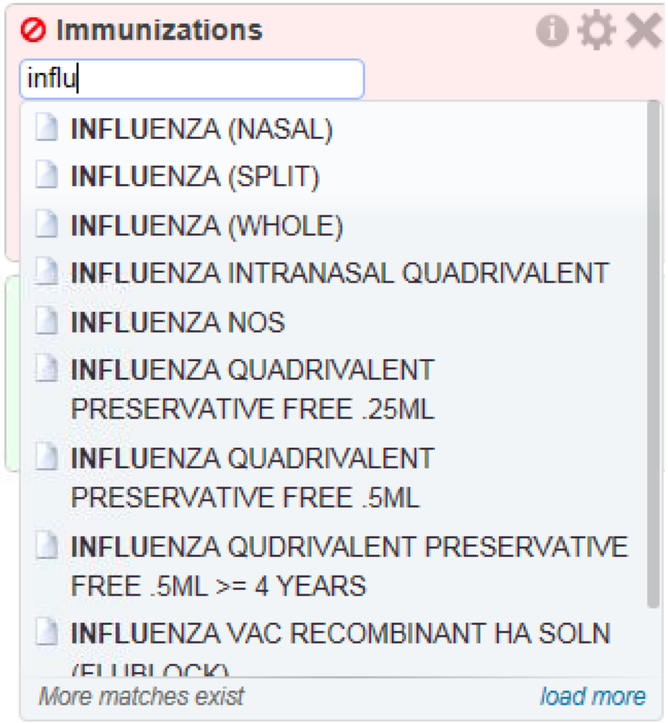

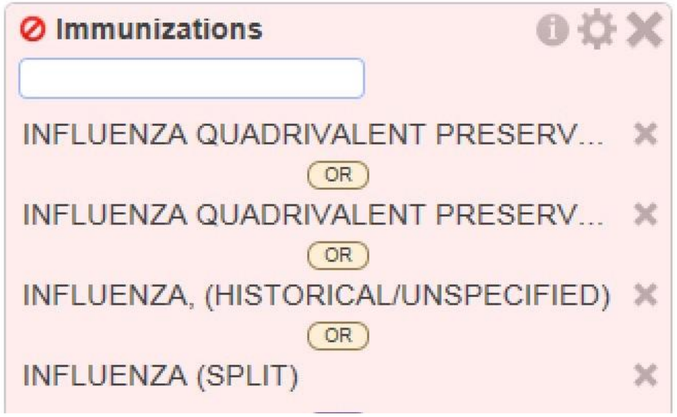

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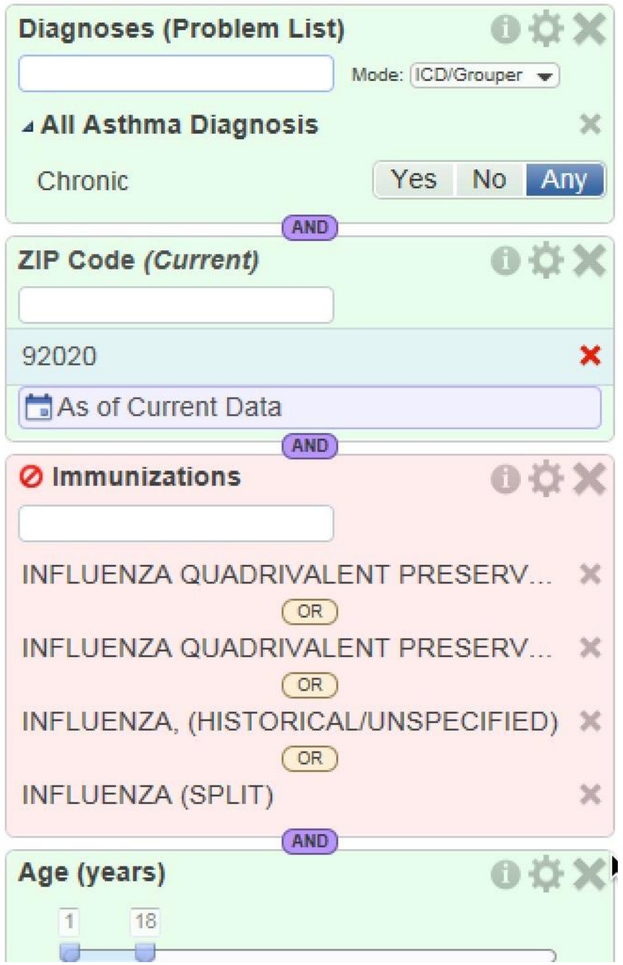

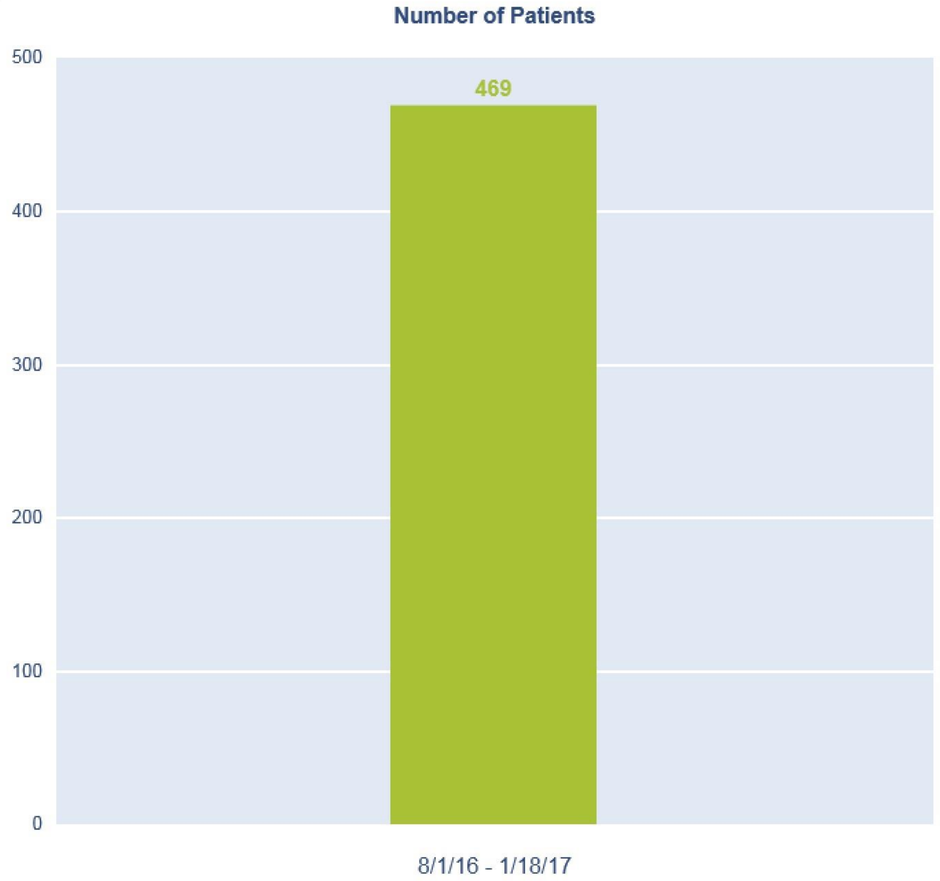

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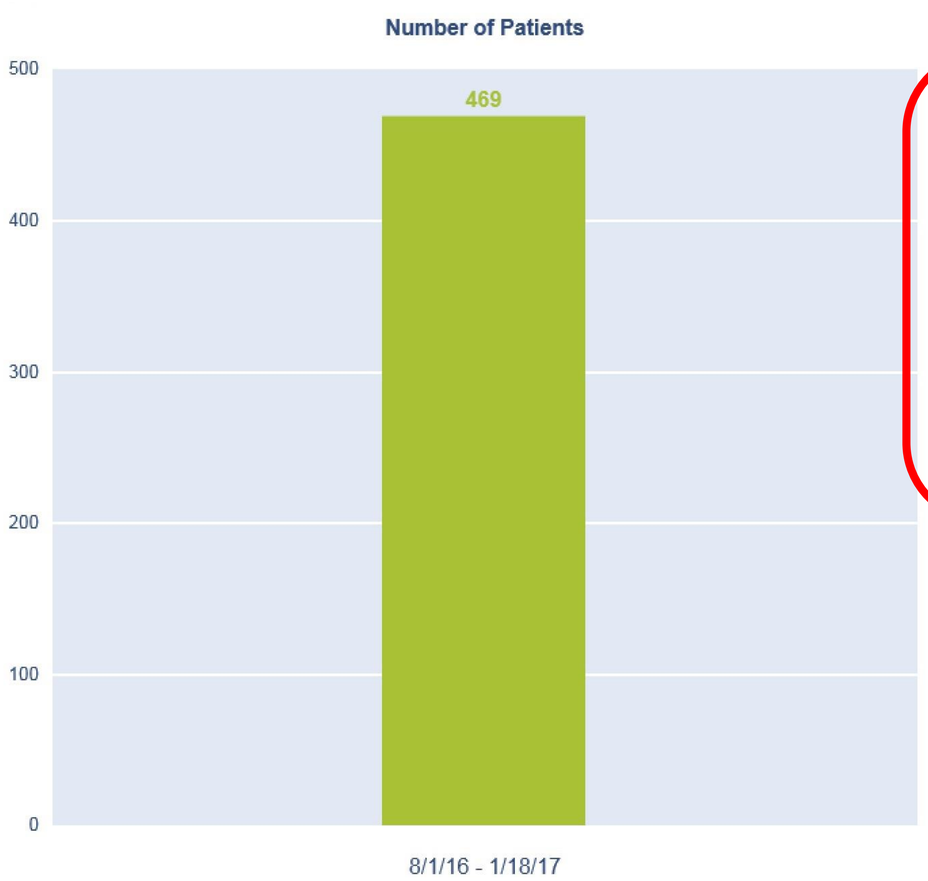

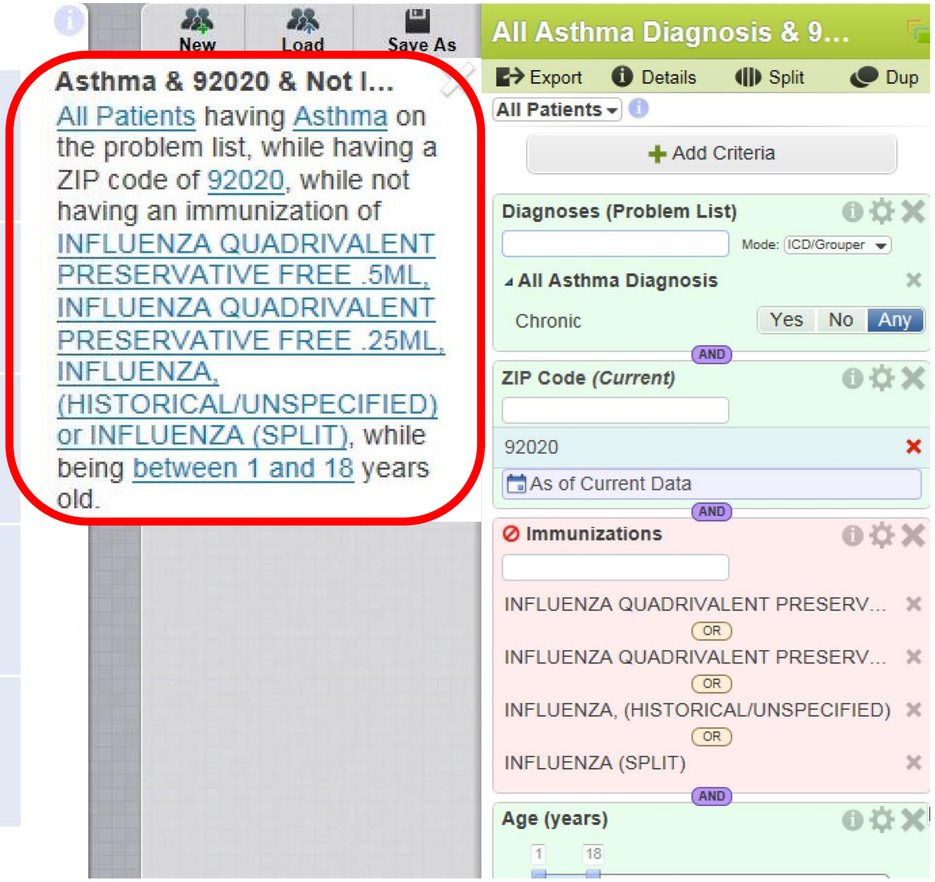

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TAKE ACTION

Generate Letters
HM Modifiers
Add to List
Send Patients Message

TAKE ACTION

Age	Problem List	Allergies	PCP
12-year old	—	No Known Allergies	Burgamy, Elizabeth B, MD
12-year old	—	Azithromycin	Muth, Natalie D, MD
12-year old	Dyslipidemia	No Known Allergies	Muth, Natalie D, MD
12-year old	—	No Known Allergies	Jacobson, Michael B, MD
12-year old	—	No Known Allergies	Burgamy, Elizabeth B, MD

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Option C

TCPi Learning Collaborative: Leveraging Your Data

Michael Jacobson, MD, FAAP, FACMI
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