



Programming Population Health

Brad Carey

Vice President and General Manager, Population Health
Cerner Corporation

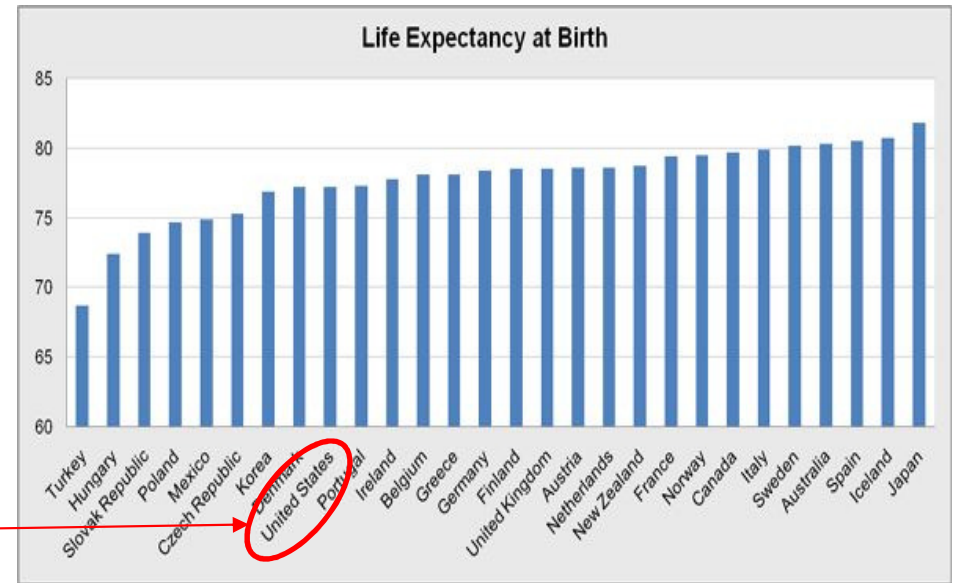
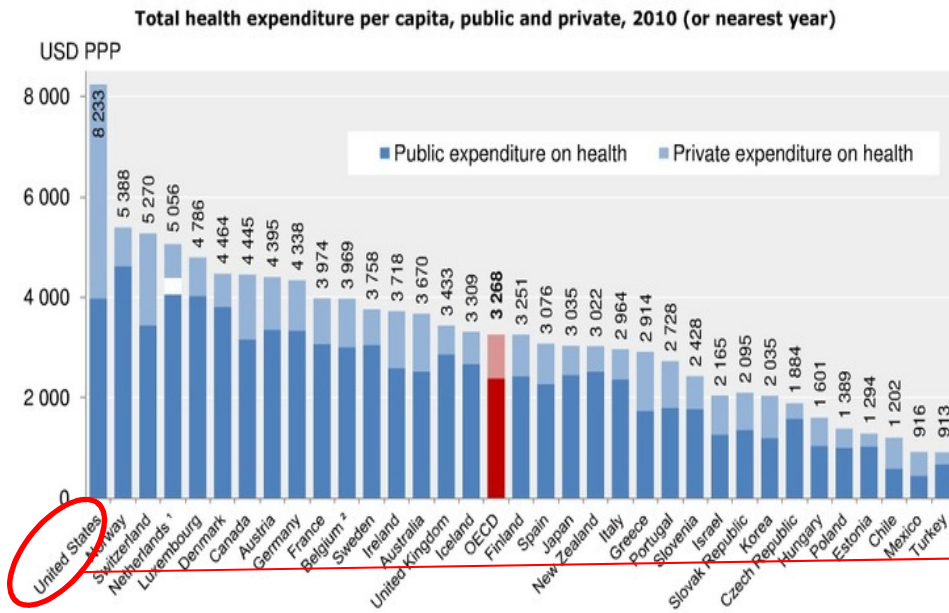
himss
CENTRAL & SOUTHERN OHIO *Chapter*

Are you a group to be reckoned with?



Highest spend – mediocre outcomes

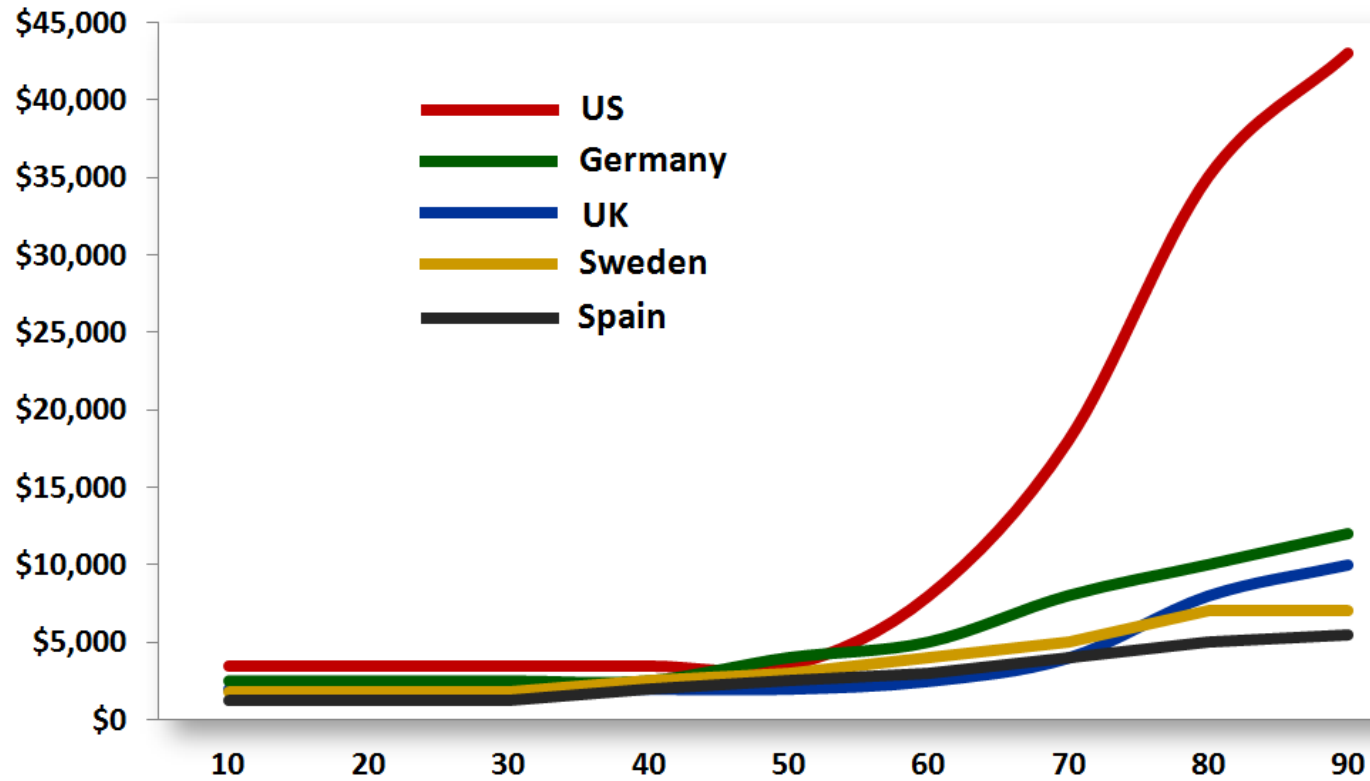
US spends two-and-a-half times the OECD average



1. In the Netherlands, it is not possible to clearly distinguish the public and private share related to investments.
 2. Total expenditure excluding investments.
 Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

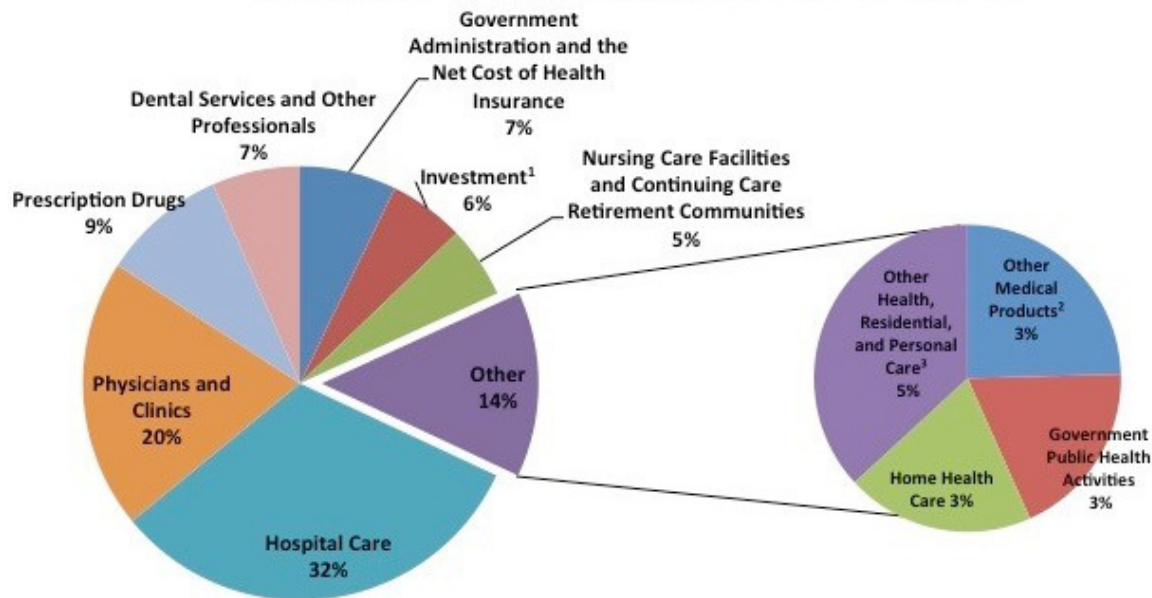
Source: OECD Health Data 2012.

Annual per capita health care costs by age



Assembled by
Carnegie Mellon
University professor
Paul Fischbeck – and
reported by Mark
Roth of the
Pittsburgh Post-
Gazette ([December, 2009](#))

The nation's health dollars (\$2.9 trillion) – 2013: Where it went



- 52% on hospitals and clinics
- 5% Nursing and continuing care
- 5% Residential and personal care
- 3% Home Health
- 3% Public Health

¹ Includes Research (2%) and Structures and Equipment (4%).

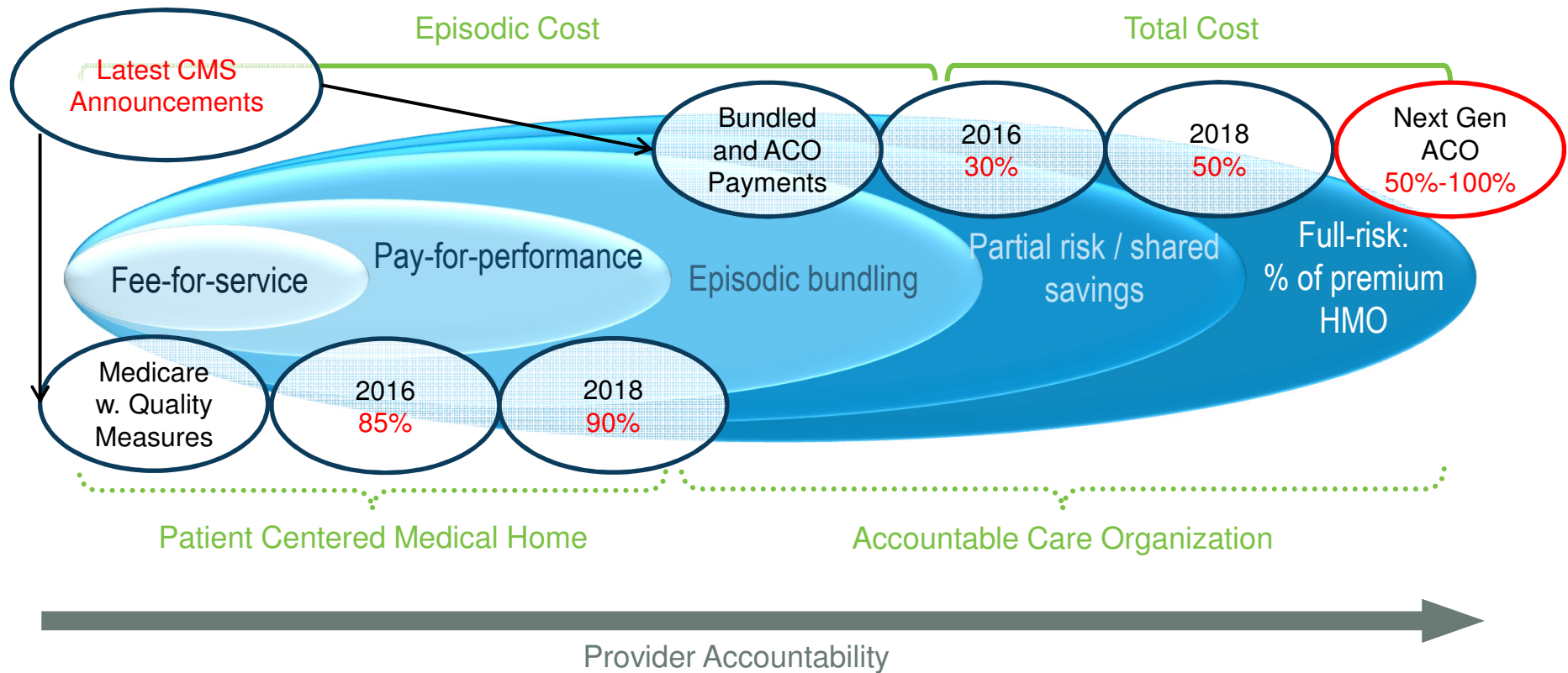
² Includes Durable (1%) and Non-durable (2%) goods.

³ Includes expenditures for residential care facilities, ambulance providers, medical care delivered in non-traditional settings (such as community centers, senior citizens centers, schools, and military field stations), and expenditures for Home and Community-based Waiver programs under Medicaid.

Note: Sum of pieces may not equal 100% due to rounding.

SOURCE: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group.

From volume to value - continuum of payment models



Population Health Strategies

TRIPLE AIM



What is Needed?



Connect the continuum

Empower people, care teams
and organizations

Facilitate knowledge-driven care
and continuous learning

... to move from reactive care to
proactive health.

Technology Challenges

Device connectivity & data

Data Blocking

No single identifier

Lack of standards

Openness & Interoperability

Aggregation & Normalization
of all types of data



Conversion of documents &
textual to discrete

Rapidly create new knowledge

Real /Near Real time capabilities

Rapidly have new
knowledge adopted

Usability

Affordability

Scalability

Anywhere, Anytime Availability

Configurability

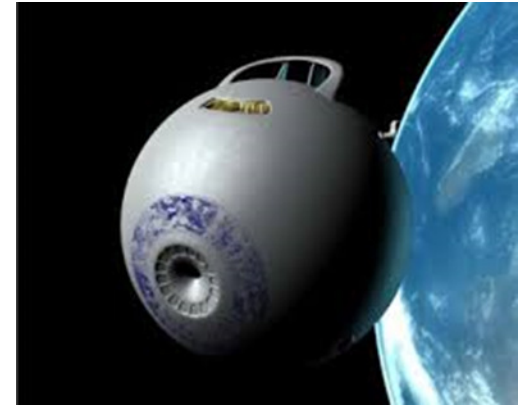


CENTRAL & SOUTHERN OHIO Chapter

Human Behavior Challenges



Is there hope?



Technology Advancements

New Age eco-systems for population health are emerging

Cloud-based

System/Solution Agnostic

Big Data Capable

Real / Near Real time
(decision support, analytic, etc.)

Ability to Discover
new Knowledge
(research, machine
learning, etc.)



Aggregate & Normalize data
(create meaningful concept)

Ability to Innovate
(software development toolkits,
data syndication)

Any data, Any format, Any frequency (ideally real time)

Technology Advancements - Platforms



*distributed, fault
tolerant queuing*



*lightning fast cluster
computing*



Technology Advancements – Usability & the Person



Technology Advancements – Rapidly evolving



Natural Language Processing



Genomics



Longitudinal Plan



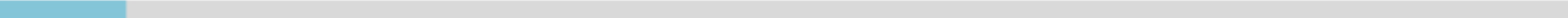
The Connected World



Emerging Technologies



Innovators



Human Behavior – Learnings from others



Big Data Analytics / Predictive Models / Behavior Change

Can we change habits related to health?





Maria

9 year old girl who lives with asthma

HEALTH TEAM



Maria Cortez
PATIENT



Cristina & Julio
**MOTHER AND
FATHER**



Lisa
SCHOOL NURSE



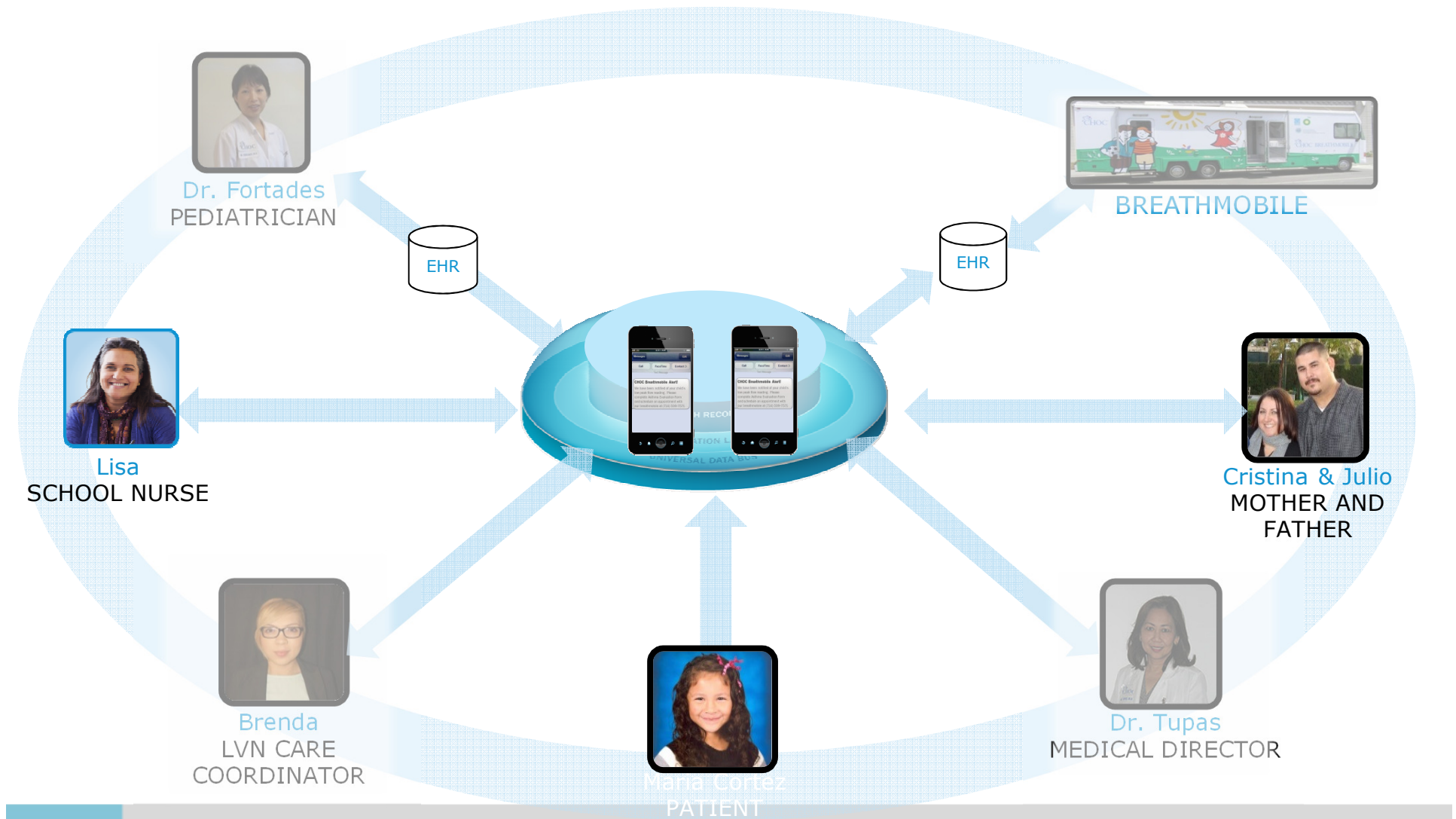
Dr. Tupas
**POPULATION
HEALTH MEDICAL
DIRECTOR**



Brenda
**LVN CARE
COORDINATOR**












Dr. Fortades
PEDIATRICIAN





Maria uses her spirometer at school

 Maria Cortez ▾

-  **Health Profile**
-  Visit History
-  Results
-  Documents
-  Medications
-  Immunizations
-  Allergies
-  Health Issues
-  Procedures

Health Profile

The information provided below is in the electronic medical record. If you believe any data is incorrect, please notify the office.

Asthma Action Plan



Triggers

Smoke, Pollen, Mold, Exercise

Green Zone: Go! Peak Flow: 240 - 205

Symptoms:



- Breathing is easy.
- No cough or wheeze.
- Can sleep all night.

Date ▾	Reading ▾	Location ▾
Yesterday	205	Home 
Yesterday	210	Home 

Yellow Zone: Caution Peak Flow: 205 - 155

Symptoms:

- First sign fo a cold.
- Cough or mild wheeze.
- Problems sleeping, working, or playing.
- Tight chest.

Date ▾	Reading ▾	Location ▾
Today	180	School 
Today	185	School 

Red Zone: Emergency - Get Help Peak Flow: < 155

Symptoms:

- Can't talk, eat, or walk.
- Medicine not helping.
- Breathing hard and fast.
- Blue lips and fingernails.
- Tired or lethargic.
- Ribs show.

Date ▾	Reading ▾	Location ▾
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Christina (Mom) logs into Maria's member portal and see her daughter's peak flow readings

Overview **Population** Performance Reports Pharmacy Outreach

Alvarez, Brenda Log Out

Alert Queue

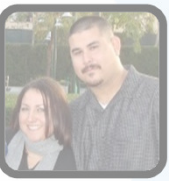
Priority	Status	Patient & Subject	Received
Urgent Complete Call Message Comment	New	McBride, Lucas Call patient to assess respiratory status View Patient's Alerts	11:01 AM
Urgent Complete Call Message Comment	New	Cortez, Maria Call patient to assess respiratory status View Patient's Alerts	10:50 AM
Urgent Complete Call Message Comment	New	Abbot, Clark Questions about appointment this afternoon View Patient's Alerts	10:24 AM
Urgent Complete Call Message Comment	New	Morton, Latoya Consult report View Patient's Alerts	9:14 AM
Urgent Complete Call Message Comment	New	Hudson, Josh Questions about appointment this afternoon View Patient's Alerts	9:12 AM



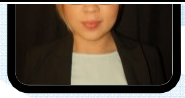
MOBILE



Lisa
SCHOOL NURSE



Cristina & Julio
MOTHER AND FATHER



Brenda
LVN CARE

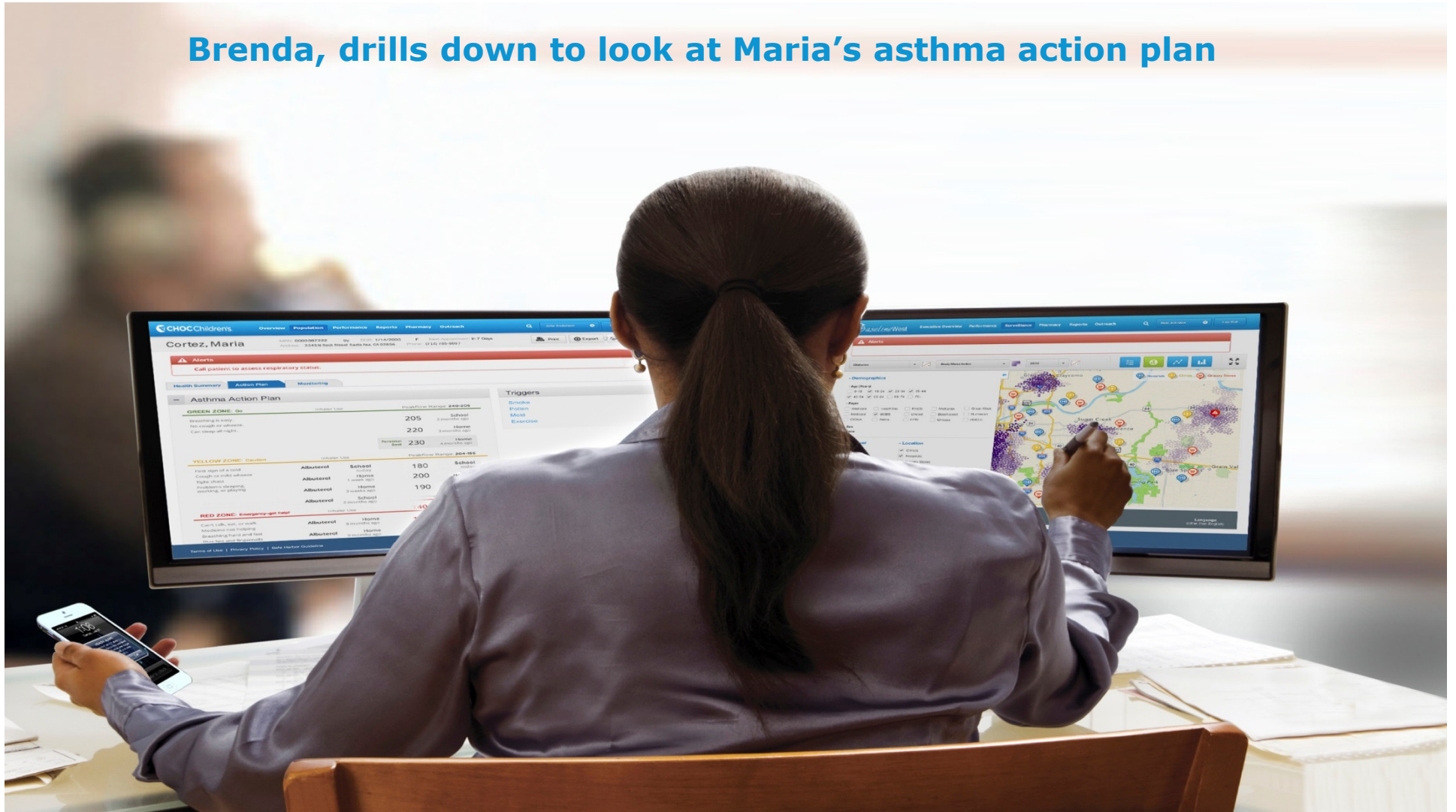


Dr. Tupas
MEDICAL DIRECTOR

Brenda (care manager) identified that Maria is at risk

PATIENT

Brenda, drills down to look at Maria's asthma action plan



Cortez, Maria

MRN: 0003367222 9y DOB: 1/14/2005 F Next Appointment: In 7 Days
Address: 2345 N Bush Street Santa Ana, CA 92856 Phone: (714) 785-8097

Print Export Outreach

Alerts

Patient in yellow zone. Please have an evaluation completed and appointment within the next 24 hours.

Health Summary **Action Plan** Monitoring

Asthma Action Plan

GREEN ZONE: Go

Breathing is easy.
No cough or wheeze.
Can sleep all night.

Inhaler Use

Peakflow Range: 240-205

205	School 2 months ago
220	Home 3 months ago
Personal Best 230	Home 4 months ago

YELLOW ZONE: Caution

First sign of a cold
Cough or mild wheeze
Tight chest
Problems sleeping,
working, or playing

Albuterol	School today
Albuterol	Home 1 week ago
Albuterol	Home 3 weeks ago
Albuterol	School 2 months ago

Peakflow Range: 204-155

180	School today
200	Home 1 week ago
190	Home 3 weeks ago

RED ZONE: Emergency-get help!

Can't talk, eat, or walk
Medicine not helping

Albuterol	Home 8 months ago
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Peakflow Range: <155

140	Home 8 months ago
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Triggers

- Smoke
- Pollen
- Mold
- Exercise

Maria's asthma action plan that Brenda would have access to



At the mobile clinic, the nurses are using the EMR for scheduling



Dr. Fortades
PEDIATRICIAN



BREATHMOBILE



Lisa
SCHOOL NURSE

The EMR app interface on the tablet displays a patient schedule for 'Today' at Children's Hospital of Orange County. The schedule is organized into two columns: a list of patients on the left and a timeline on the right. The patient list includes:

- Cook, Zoey (Cough) - 9:00am, Checked out Rm 2
- Macy, Jake (Cough) - 10:00am, Seen by doctor Rm 3
- Cortez, Maria (Difficulty breathing) - 11:00am, Seen by nurse Rm 2
- Lunch BBQ - 12:00pm
- Crown, David (Difficulty breathing) - 1:00pm, Confirmed
- Carter, Billy (Cough) - 2:15pm, Confirmed
- Sluskv, James (Difficulty breathing) - 3:00pm, Confirmed
- Torres, Savannah (Cough) - 3:30pm, Confirmed
- Frost, Kathryn (Difficulty breathing) - 4:00pm, Confirmed

The timeline on the right shows the following events:

- 8:00am - 9:00am: Cook, Zoey (Cough)
- 9:00am - 10:00am: Macy, Jake (Cough)
- 10:00am - 11:00am: Cortez, Maria (Difficulty breathing)
- 11:00am - 12:00pm: Lunch BBQ
- 12:00pm - 1:00pm: Crown, David (Difficulty breathing)
- 1:00pm - 2:00pm: Carter, Billy (Cough)
- 2:00pm - 3:00pm: Sluskv, James (Difficulty breathing)
- 3:00pm - 4:00pm: Torres, Savannah (Cough)
- 4:00pm - 5:00pm: Frost, Kathryn (Difficulty breathing)

At the bottom of the screen, there is a search bar with 'Alvarez, Brenda' and a 'Patient' filter icon.



Cristina & Julio
MOTHER AND FATHER



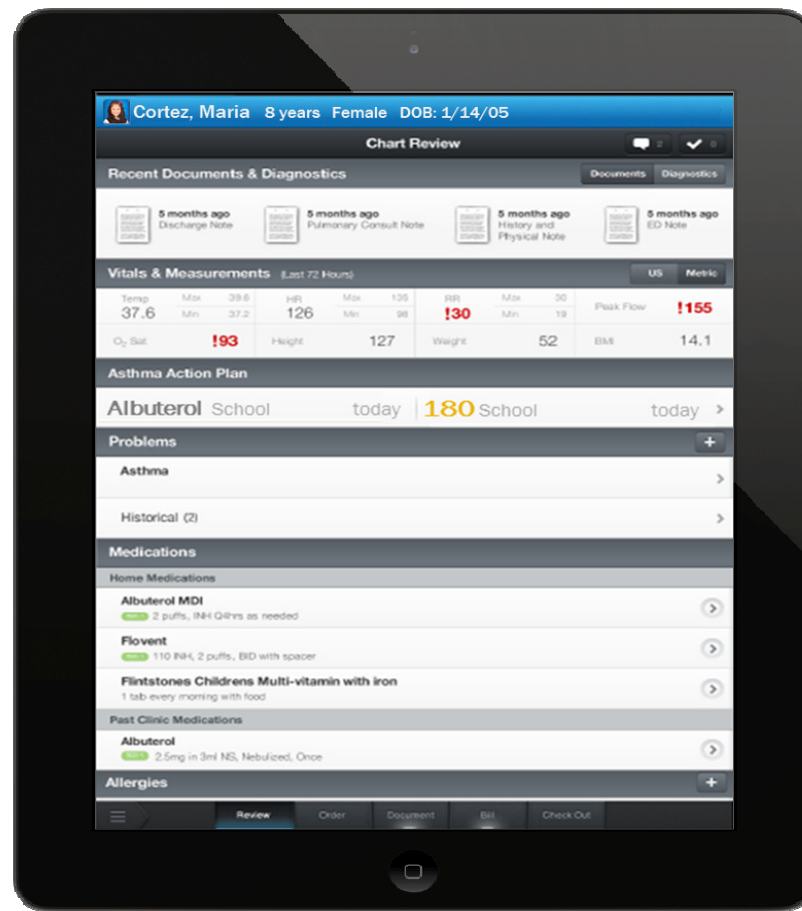
Brenda
LVN CARE COORDINATOR



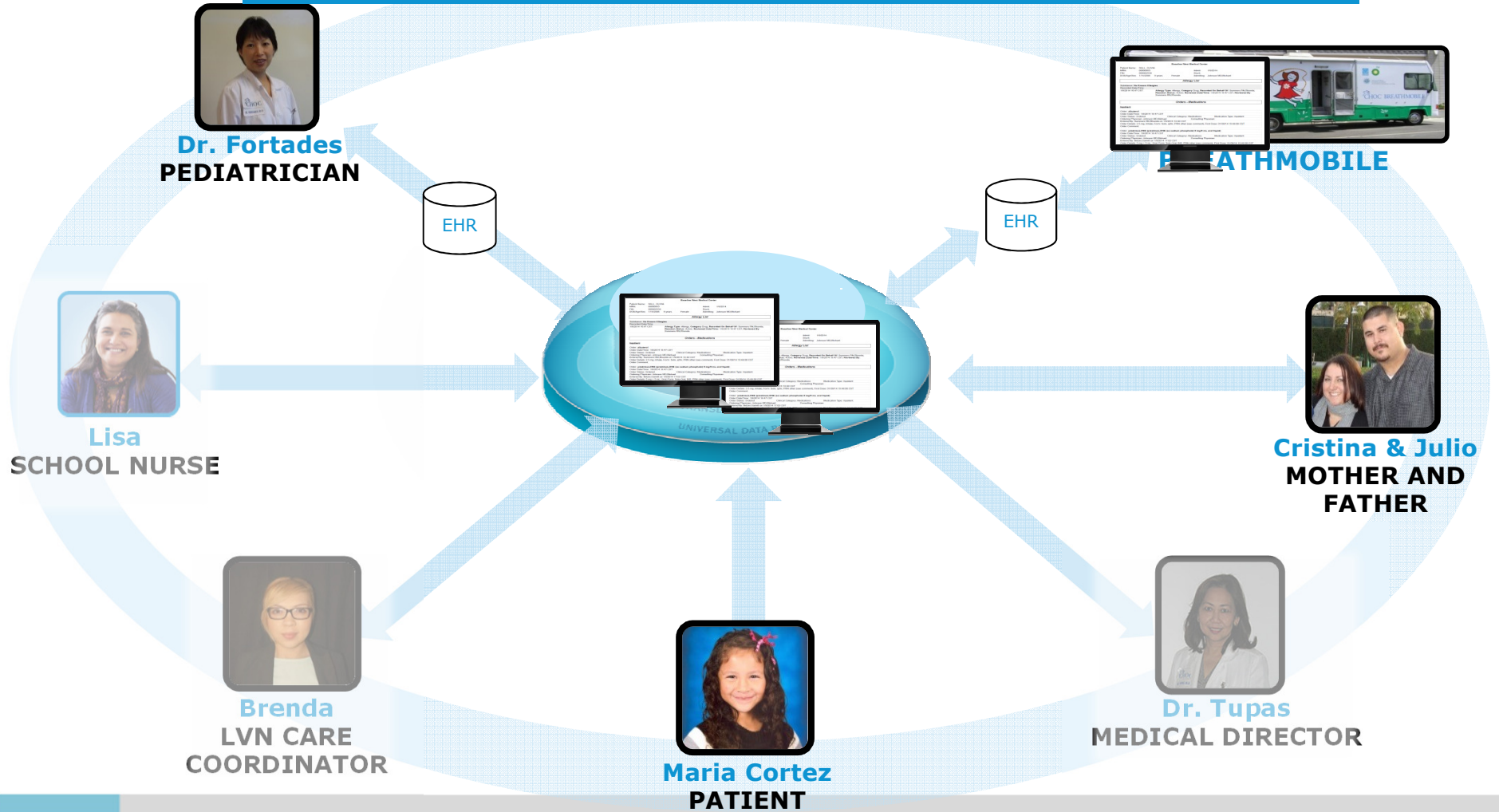
Dr. Tupas
MEDICAL DIRECTOR

Maria Cortez
PATIENT

...and management



Note sent automatically to Dr. Fortades and the member portal



Registries

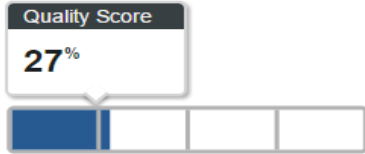
Organizations

Search Organizations

Calvert Family Practice 27%

Calvert Family Practice

Provider List
12,022 Persons
31% Complete



Asthma Care Met %

Zoom out

2% Met Influenza Vaccination - Partial Season 353 Persons Qualified 343 Persons Not Met 2% Completed	6% Met Pneumonia Vaccination 227 Persons Qualified 212 Persons Not Met 6% Completed	
20% Met Influenza Vaccination - Full Season 353 Persons Qualified 279 Persons Not Met 20% Completed	30% Met Action Plan Complete 353 Persons Qualified 246 Persons Not Met 30% Completed	63% Met Tobacco Use Screening and Cessation 353 Persons Qua... 130 Persons Not ... 63% Completed

Breathmobile nurses can manage an entire population of asthma patients



Registries

Organizations

Search Organizations

Sort By: Quality Score

Population

Parker Reed Memorial Hospital 24%

Calvert Family Practice 24%

RockCreek Clinic 25%

Rogers Medical Group 25%

Southside Hospital 26%

Northland Physician Practice 26%

Grace Medical Center 28%

Frontage Street Physicians 28%

Southside Hospital

Provider List

9,543 Attributed Persons

30% Complete

Quality Score

26%



Pediatric Well...

Met %



Zoom out

0% Met

Tobacco Exposure Screening

2,172 Persons Qualified
2,172 Persons Not Met
0% Completed

1% Met

Body Mass Index

2,172 Persons Qualified
2,148 Persons Not Met
5% Completed

11% Met

Blood Pressure Measurement

2,172 Persons Qualified
1,927 Persons Not Met
11% Completed

16% Met

Nutrition Assessment or Counseling

2,172 Persons Qualified
1,814 Persons Not Met
16% Completed

24% Met

Screen Time Assessment or Counseling

2,172 Persons Qualified
1,642 Persons Not Met
24% Completed

15% Met

Physical Activity Assessment or Counseling

2,172 Persons Qualified
1,832 Persons Not Met
15% Completed

25% Met

Tobacco Use Screening and Cessation

660 Persons Qualified
493 Persons Not Met
25% Completed

26% Met

Adolescent Depression Screening

791 Persons Qualified
585 Persons Not Met
26% Completed

Scenarios

Cost of ED & hospitalizations



Traditional scenario

***only 35% of asthmatic children** with medical **have controlled asthma** within a one year period

Cost of two mobile asthma clinics



Breathmobile scenario

***over 75% of medical patients reach asthma control** after three visits on the van within a one year period

**Financial information based on 1,200 patients being seen per year*

Thank you

