



# **ITSD Staff Meeting Public Health Informatics**

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# Public Health

- Understanding Populations
- Improving Environments
- Supported by Informatics



# Public Health

*“Fulfill society's interest in assuring conditions in which people can be healthy.”*

*(Institute of Medicine, 1998)*



# Public Health

## Understanding the patient ...

- Disease patterns and distributions
- Health status and outcomes
- Access to health services
- Health service delivery



# Public Health

## Understanding impacts on patient ...

- Emergency response and preparedness
- Environmental hazards
- Socioeconomic status
- Resource allocation and management



# Public Health

Beyond the individual ...

- The patient is the population
- Assessment is multi-factorial
- The treatment is the environment

... taking data to policy



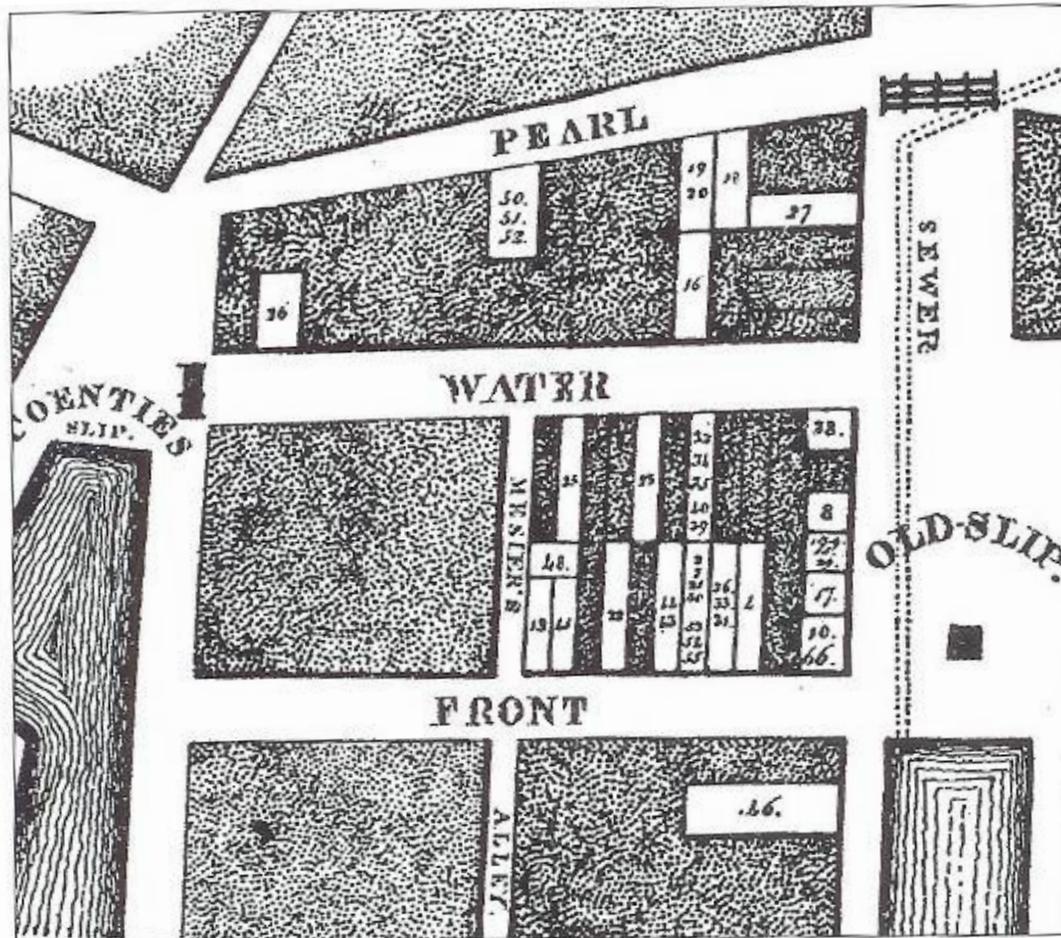
# Public Health

Vital records through the centuries to ...

- Monitor and Assess
- Establish and Evaluate



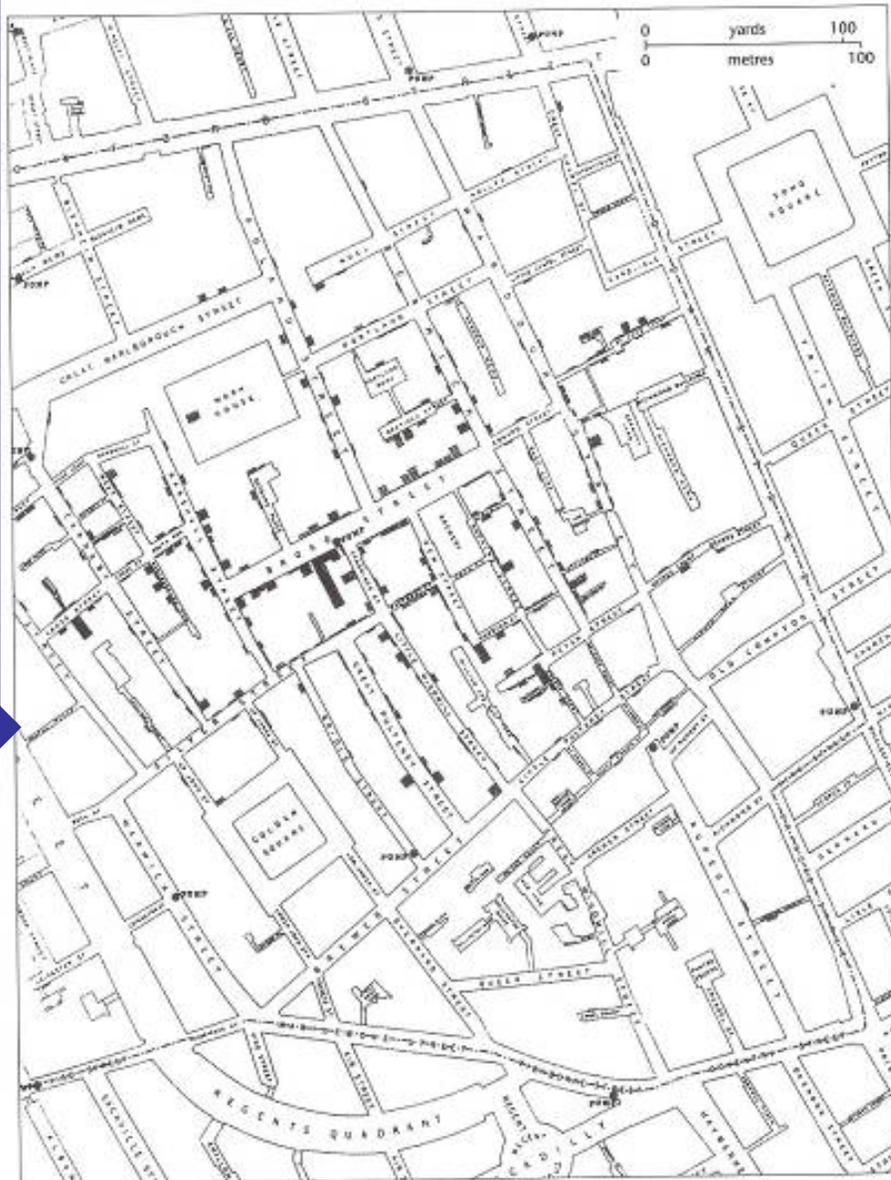
# Monitor and Assess



**Figure 2.8b** Detail in black and white of Pascalis's map of yellow fever cases near Old Slip, New York, 1819. Fatal cases are numbered sequentially by time of death.

Source: New York Academy of Medicine Library.

Source: Cartographies of Disease: Maps, Mapping, and Medicine, 1<sup>st</sup> Edition, Tom Koch, ESRI, 2005.



# Establish and Evaluate

Source:  
Cartographies of Disease: Maps, Mapping, and Medicine, 1<sup>st</sup> Edition,  
Tom Koch, ESRI, 2005.



Figure 4.12a Snow's map of the Broad Street outbreak, 1854, from *On the Mode of Communication of Cholera, Second Edition*.

Source: Reproduced courtesy of College of Physicians of Philadelphia.

# The 20<sup>th</sup> Century

## Leading Causes of Death, 1900

1. **Pneumonia and Influenza**
2. **Tuberculosis**
3. **Diarrhea**
4. Disease of the heart
5. Intracranial lesions of vascular origin
6. Nephritis
7. All accidents
8. Cancer
9. Senility
10. **Diphtheria**

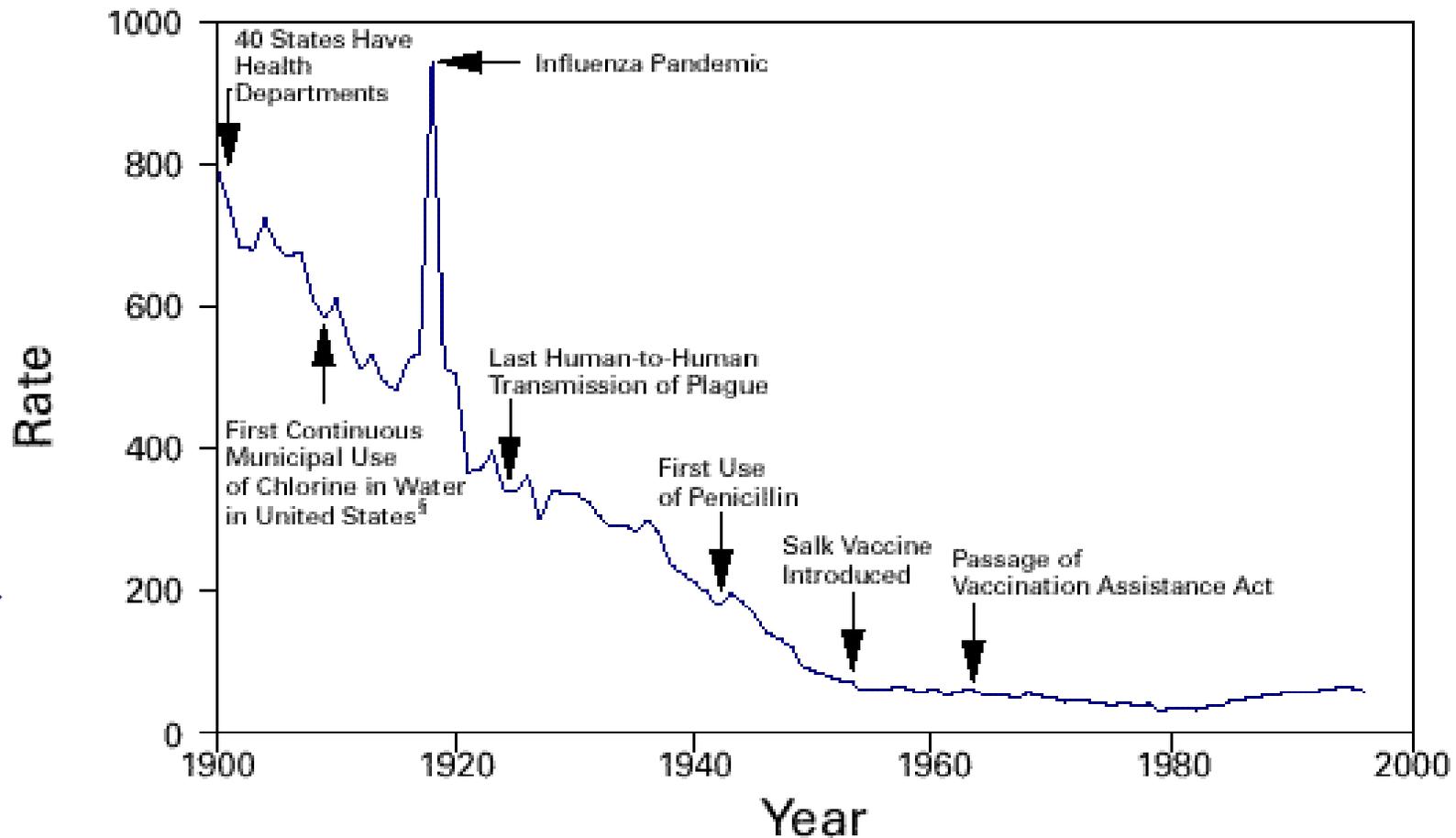
# Advances for the 20<sup>th</sup> Century

## Infectious Diseases ...

- Clean drinking water
- Sewage treatment

... changed by Environment

**FIGURE 1. Crude death rate\* for infectious diseases — United States, 1900–1996†**



\*Per 100,000 population per year.

†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999;281:61–6.

<sup>5</sup>American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.



# The 21<sup>st</sup> Century

## Leading Causes of Death, 2000

1. Heart Disease
2. Cancer
3. Stroke
4. Lung Disease
5. Accidents
6. Influenza/Pneumonia
7. Diabetes
8. Alzheimer's Disease
9. Cirrhosis
10. Suicide



# Advances for the 21<sup>st</sup> Century

## Chronic Diseases ...

- Land management/City planning
- Safe neighborhoods

... will be changed by Environment

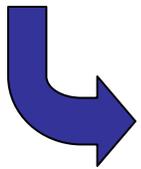


# What's Needed

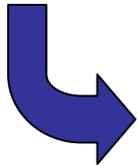
- Data
  - Transformed into Information
    - To create Knowledge
      - To make Decisions

# The Transformation

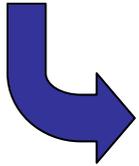
Data Collection



Data Management



Process, Analyze &  
Interpret Data



Use Information for  
Public Health

*Common  
Ground  
Business  
Processes*



# Common Ground Program

- Robert Wood Johnson Foundation
- Improve public health informatics
  1. Identify shared business processes for chronic disease in public health
  2. Redesign systems needed to support chronic disease prevention & control
  3. Identify requirements of this system



# Moving into the Future

- Electronic health exchange
- Use of hubs to transfer data
- Use of web-based services to meet needs
- Use of real-time data for decision making



# Public Health Informatics

***Public Health Informatics*** - the systematic application of information and computer science and technology to public health practice, research, and learning (*Public Health Informatics and Information Systems, 2003*)

***Public Health Mission*** - "Fulfill society's interest in assuring conditions in which people can be healthy." (*IOM, 1998*)

***Public Health Core Functions*** - Assessment, Policy Development, Assurance (*IOM, 1998*)



# Informatics

## The Automation of Information

- Giving you the system that allows you to find the answers you need
- Developing methods for judging if information systems support the work you do
- Streamlining systems to reduce redundancy and improve quality



# Data & Information

**Data** - A measurement or characteristic of the person or the thing that is the focus of an information system

**Information** - Data placed in context with analysis

- Data Sources – Collection
- Data Systems – Transferring & Delivering
- Business Needs – Using & Deciding

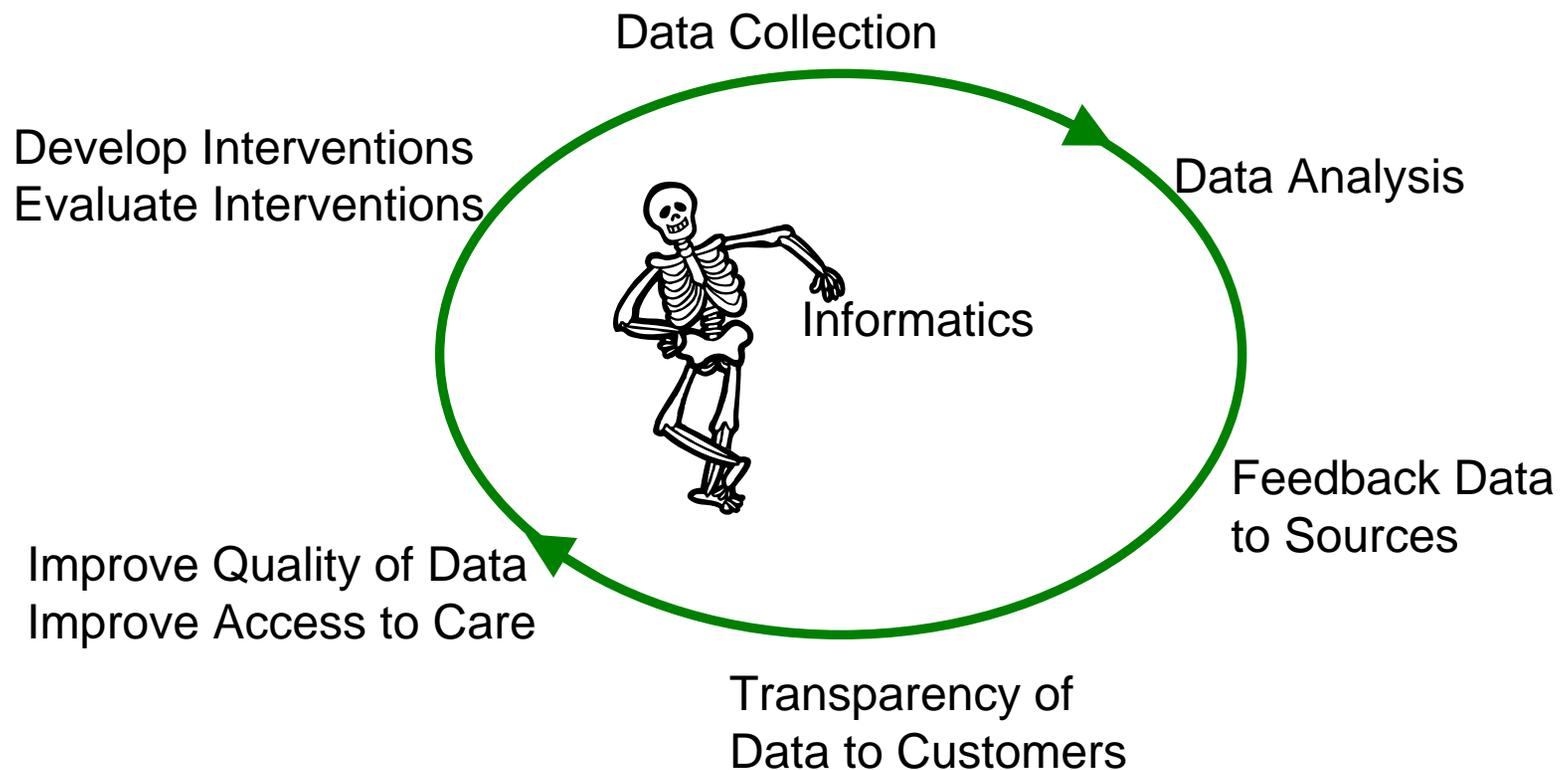


# The Information Process

- Data Collection
- Data Organization & Processing
- Data Analysis & Interpretation
- Information Communication & Dissemination
- Workforce & Staff Skills



# Data Circle



*Informatics is the framework that allows data processes to work together*

*Health Information and Strategic Planning, California Department of Public Health*

# Why Focus on Data ...

- *Evidence-Based Decisions*
- *Program Placement*
- *Improve Quality through Increased Transparency*

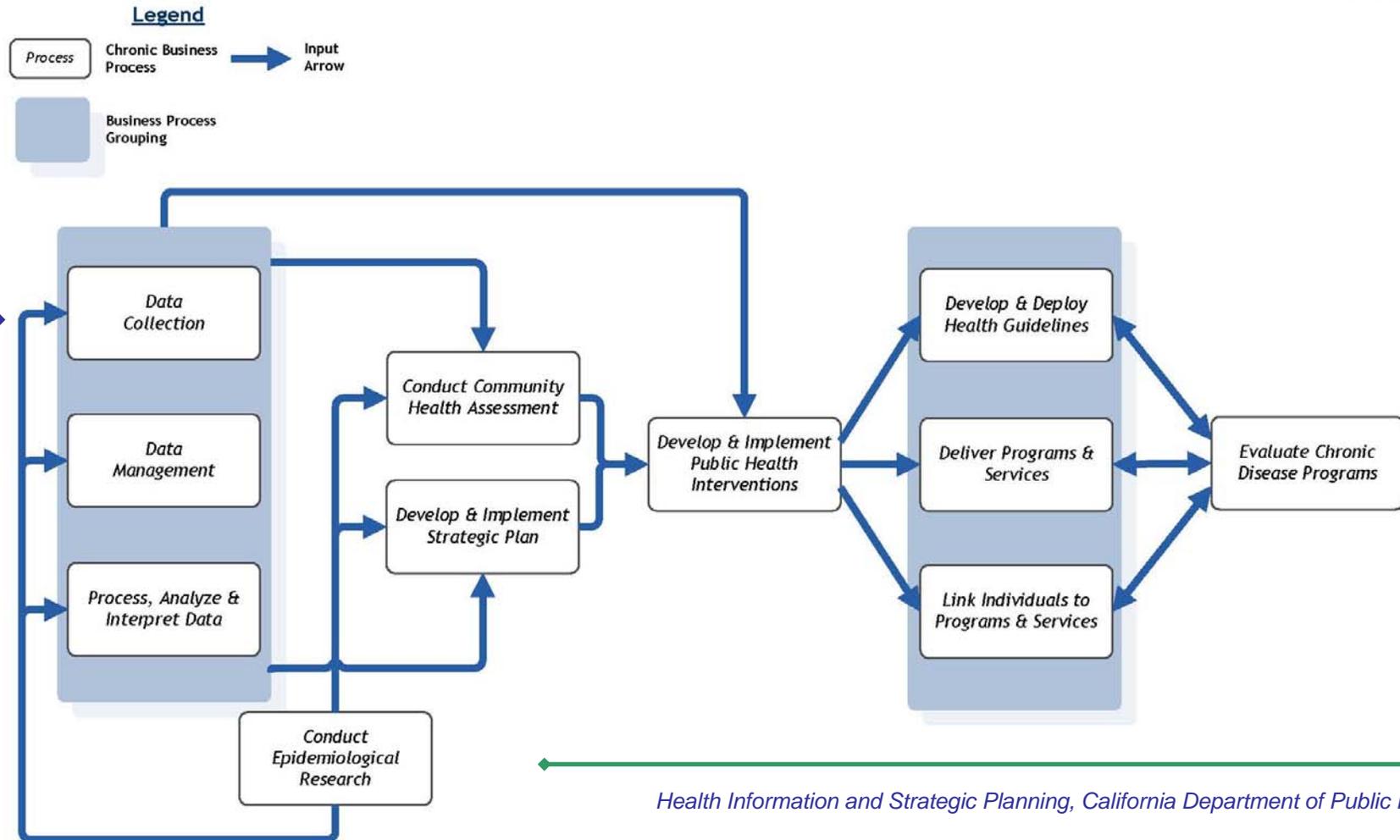
**Do you have the Data & Information you need?**



# Business Processes

## Chronic Business Processes and Relationships

Common Ground  
Chronic



Health Information and Strategic Planning, California Department of Public Health



# Assessment Cycle (CDC)

*Assessment*

*Policy  
Development*

*Assurance*

## **Assessment:**

The systematic collection, assembly and dissemination of information

## **Policy development:**

Creation of policies based on scientific knowledge

## **Assurance:**

Pledge to constituents that services necessary to achieve agreed-upon goals are provided



# Public Health

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# Public Health ...

- Understanding Populations
- Improving Environments

**... through information**





# Thank you!

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