Human Safety Overview

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Interagency Modeling and Analysis Group Pre-Meeting Webinar

Human Safety Overview

1. Individual Patient/Operator/User
2. Provider
3. Tools, Smart Instrumentation
4. Team
5. System Level
6. Population Scale
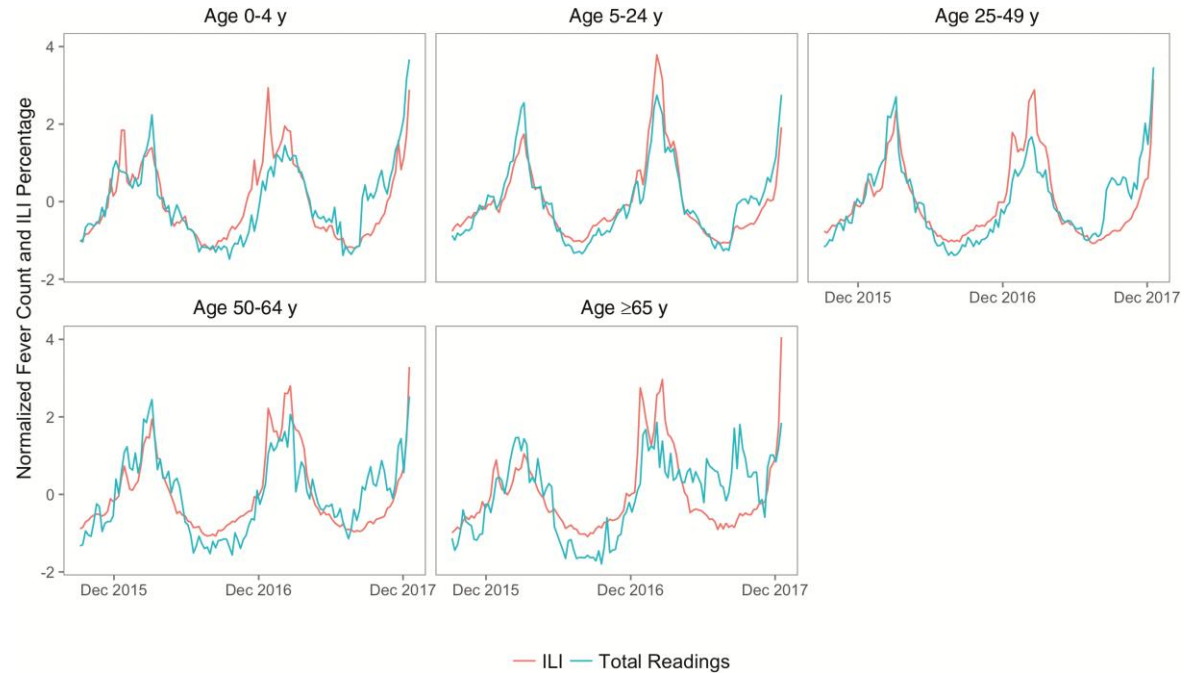7. Disease Level/Injury Level
8. Data and Information Sharing

Individual Patient/Operator/User
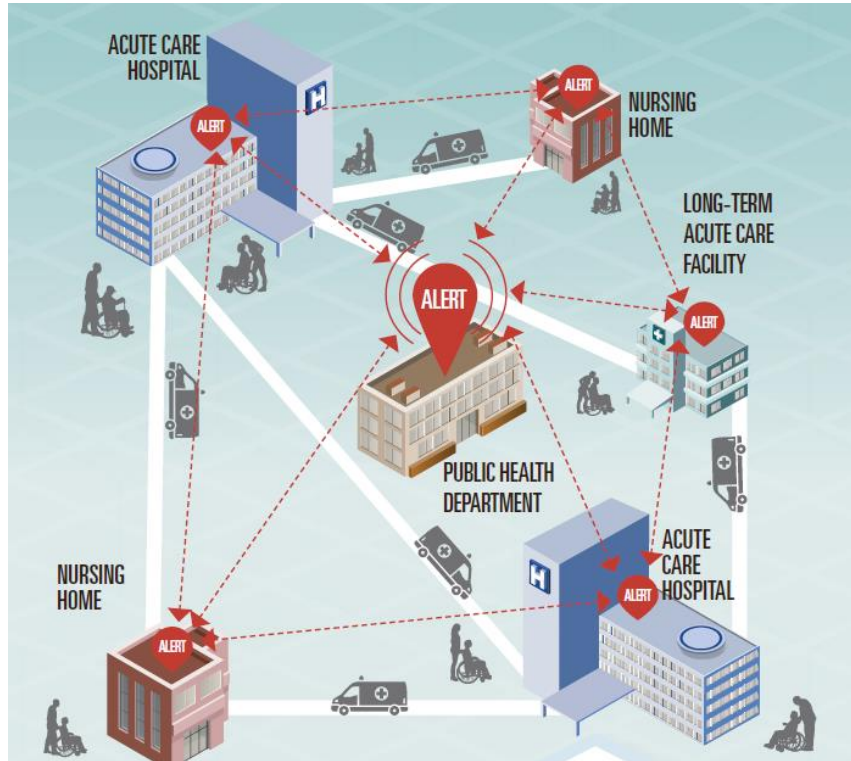
Provider

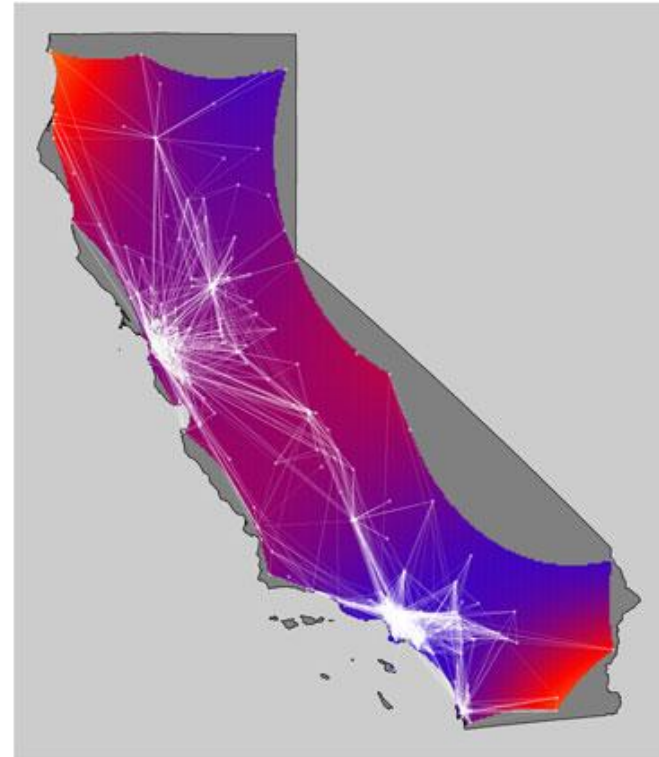# Tools and Smart Instrumentation

Miller et al. Clin Inf Dis Aug 2018
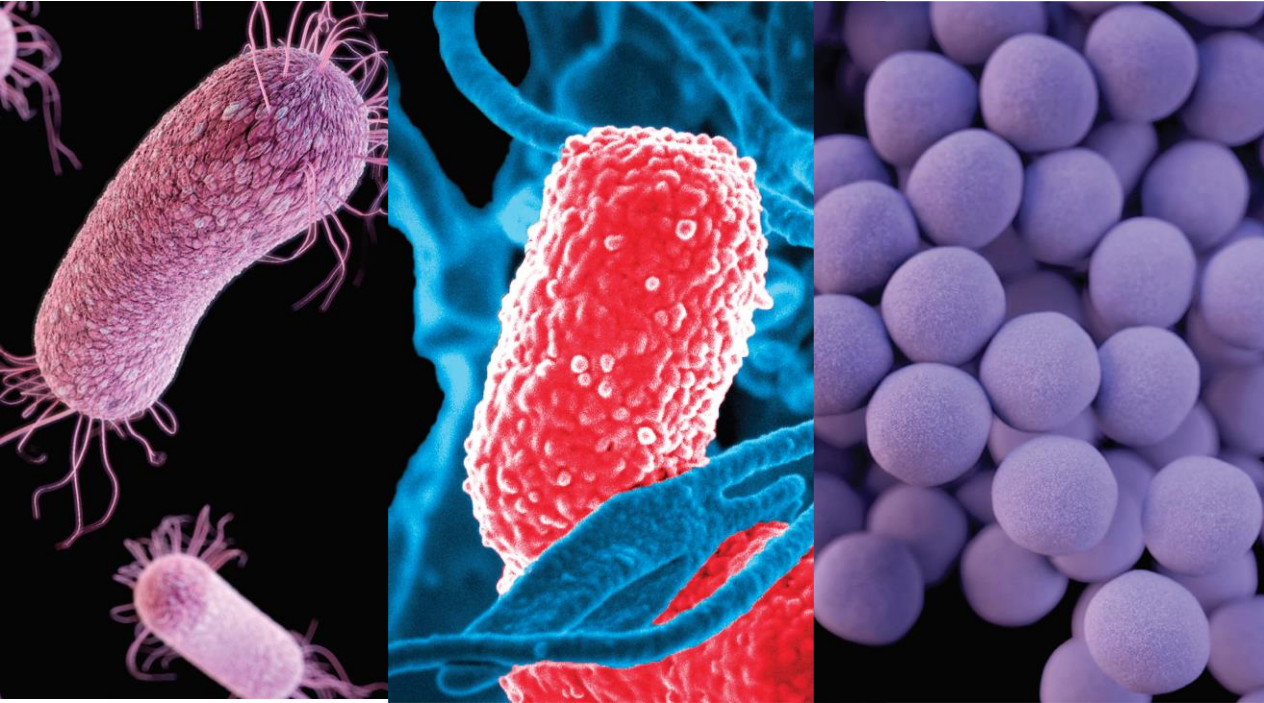
Team

System Level

Slayton et al. MMWR Aug 2015

Sewell et al. ICHE June 2019

Population Scale

http://idmod.org/research/epidemiology

Disease or Injury Level

Data and Information Sharing

Some Uses of Machine Learning at CDC/ATSDR

- Group counties by population similarity (**cluster analysis**) to compare like with like

- Combine disparate flu models to improve prediction (**ensemble learning**)

- Extract and organize elements of a cancer pathology report (**entity recognition**)

- Identify sidewalks from Google Street View (**image recognition**)

- Detect surges in social media patterns based on "meaning" (**semantic culling**)

- Summarize topics across hundreds of documents (**topic modeling**)

- Predict (e.g., from text, recordings) who meets a case definition (**classification**)

- Autocode death records and injury claims (**classification**)

Photographs are from the Public Health Image Library: https://phil.cdc.gov/

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348   www.cdc.gov

Crowdsourcing Artificial Intelligence (AI)

- **Millions of Americans are injured at work, and ~5,000 of them die as a result each year**

- **National Academies of Sciences recommended that CDC use AI to automate data processing in occupational safety and health surveillance systems**

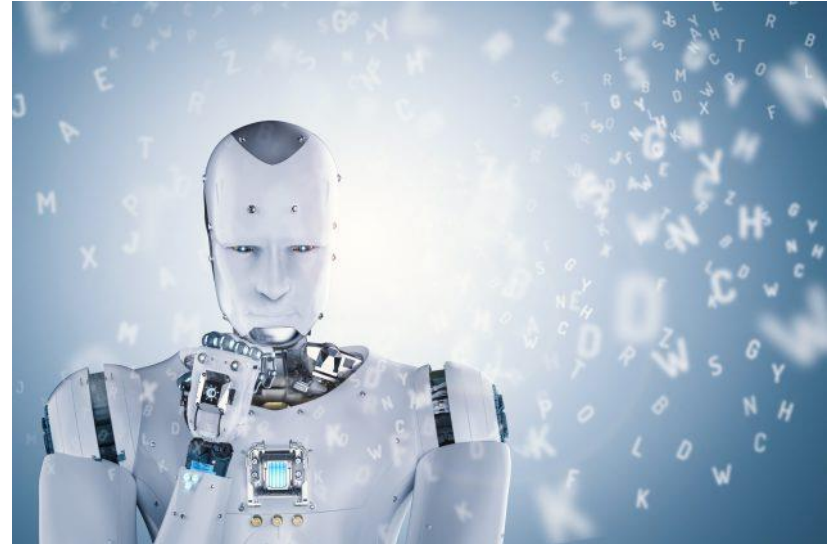- **CDC hosted an intramural crowdsourcing competition to classify injury reports**

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