

# Use of BioSense During the Southern California Wildfires

Gabriel Rainisch, MPH  
Epidemiologist

Constella Group, an SRA International Company  
In support of the BioSense BIC  
Division of Emergency Preparedness and Response  
National Center for Public Health Informatics  
Centers for Disease Control and Prevention



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# What is the BioIntelligence Center (BIC)?

- BIC Daily operations include the following:
  - Providing monitoring support to state and local health officials
  - Protocol development and implementation for anomaly detection and evaluation and health situational awareness analyses
  - Coordinating trainings, support, and communications for users and potential users
  - Application troubleshooting
  - Generating ideas for system enhancements
  - Conducting projects to better understand and use data received by BioSense



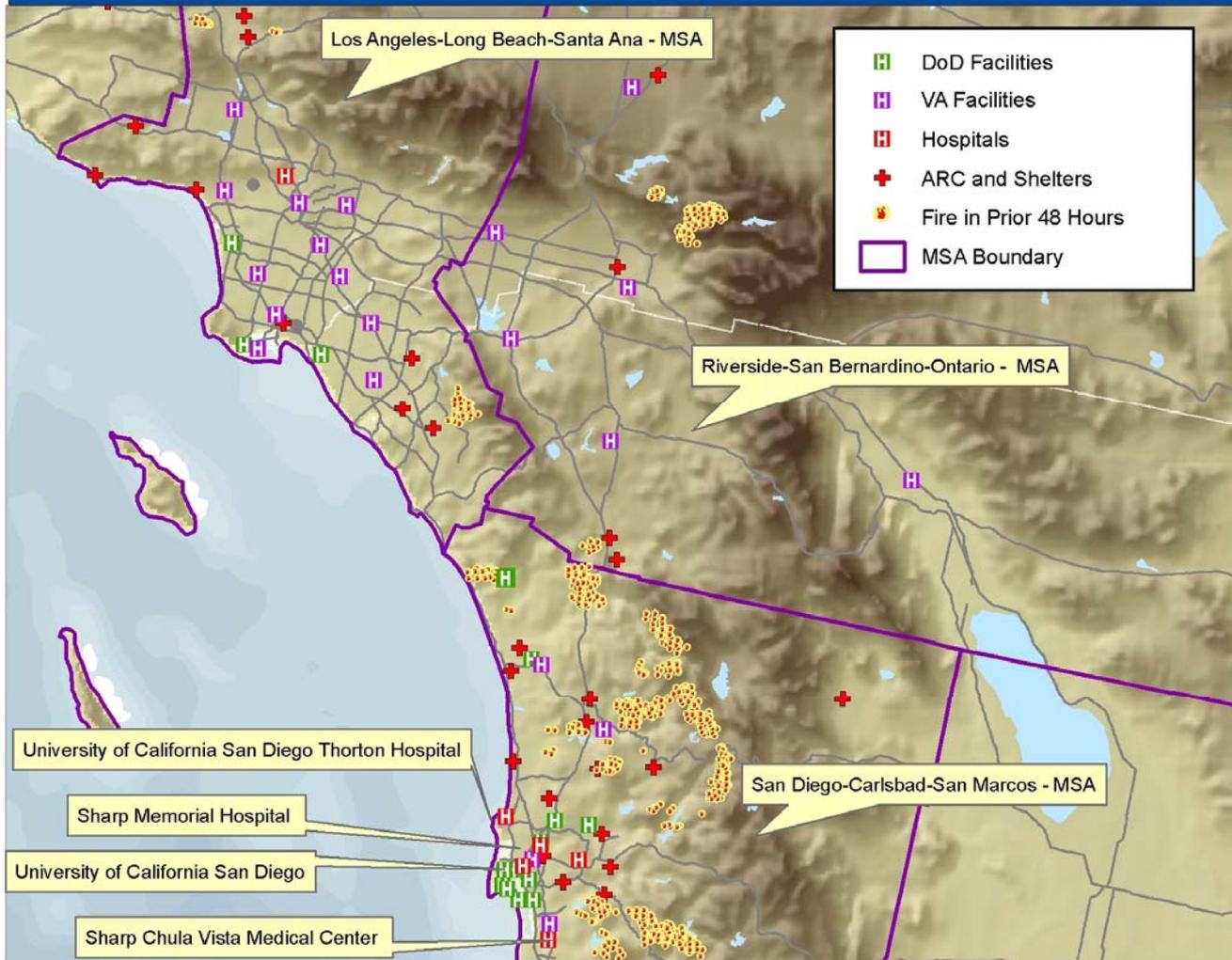
# BIC Activities

- **Monday 10/22/07:** Wildfires begin to rage out of control in Southern CA (Los Angeles and San Diego and surrounding areas).
- **Tuesday 10/23/07:** CDC's Directors Emergency Operations Center (DEOC) requests that the BIC report to them any health activity noted in BioSense that may be related.
  - BIC sends first daily report to CDC DEOC.
    - Syndrome: Respiratory (due to smoke exposure)
    - Sub-syndromes: Burns, asthma, cough, dyspnea
    - Total visit volume
  - DEOC incorporates BioSense information into the CDC Common Operating Picture (COP) and in situation reports being provided to HHS.





# BioSense Participating Facilities in Southern California and Regional Wildfires - October 25, 2007 -



# BIC Activities

- **Thursday 10/25/07:** BIC asks CA, Los Angeles, and San Diego public health contacts if they would be interested in receiving the daily reports as well.
  - All contacts respond affirmatively.
  - BIC creates a separate report for each jurisdiction (a total of three reports) daily.
  - CA requests that the BIC report be sent to the state EOC.
  - San Diego adds the BIC to its daily syndromic surveillance report distribution list.
  - San Diego suggests monitoring for gastrointestinal illness due to boil water advisories in the area. BIC expands the report in San Diego to include GI illness indicators.
    - Syndrome: Gastrointestinal
    - Sub-syndromes: Diarrhea, nausea and vomiting



# BIC Activities

- **Friday 10/26/07:** CDC National Center for Environmental Health (NCEH), Air Pollution and Respiratory Health Branch colleague requests that the BIC add cardiac health indicators to the daily report, as exposure to high concentrations of particulate matter can increase risk of cardiac endpoints.
  - BIC expands report to again to include additional indicators and adds CDC Environmental Health colleagues to the daily distribution.
    - Sub-syndromes: Cardiac dysrhythmias, chest pain, COPD, ischemic heart disease



# BIC Activities

- **Tuesday 10/23/07 to Saturday 11/3/07:** Reports produced daily 7 days per week from 10/23/07 to 11/3/07
  - Analysis included use of the BioSense application as well as analysis outside of the application to characterize VA and DoD sub-syndrome trends
- **Tuesday 11/6/07:** CDC DEOC and state and local public health indicate that acute effects of wildfires are over and that long term recovery efforts are now the primary focus.
  - CDC DEOC asks that the BIC continue to monitor the area for several weeks for potentially increasing trends in injuries as workers and residents return to damaged areas for clean up.
    - Sub-syndromes: Falls, fractures and dislocations, injury nos, open wound, sprains and strains, carbon monoxide poisoning
- **Wednesday 11/21/07:** BIC ends all routine monitoring related to the wildfires.



# Key Outcomes

- Increases in respiratory visits, especially visits for asthma and dyspnea, as well as increases in total visit volume, were noted in the hospital data.
  - These increases were most pronounced in San Diego and ranged from about a 25% increase in visits on the lower end for the respiratory syndrome to approximately a 100% increase (or doubling) of visits for asthma visits when compared to the pre-fire baseline period.
  - In general, VA and DoD data did not show similar increases.



# Lessons Learned

- Sub-syndromes crucial to effective monitoring of this event.
- Collaboration across CDC and with state and local PH was useful – The evolution and utility of the disseminated report was reliant on this collaboration.
- CA and San Diego PH found the BIC's daily reports to be useful as an augmentation to their surveillance efforts.
  - They used BioSense as one surveillance tool among other local and state systems and information sources available to them.
  - BIC able to provide VA and DoD sub-syndrome analyses that the BioSense application does not currently permit.
- CA HD sent a letter to CDC's Director, Dr. Julie Gerberding, about the usefulness of BioSense during the event and the need to expand its coverage in CA!



# Information Needs During an Event

- Quickly identify the number of facilities currently sending data to BioSense both within a BioSense-defined metropolitan area as well as outside of these defined areas (and may need to create a new “jurisdiction” on an as needed basis).
- Quickly identify facilities located close to points of interest (i.e. the wildfires and the American Red Cross shelters).
  - The BIC has made progress in the development of GIS tools which address these first 2 needs.
- Quickly analyze data from all sources in a standard way (it is difficult to accomplish this with current BioSense application because of the time it takes to do so if multiple jurisdictions are involved and because the VA/DoD side analyzes data differently than the hospital side).
  - The BIC has developed a custom SAS query that allows the population of reports quickly and which analyzes all data sources and multiple jurisdictions in a standard way.
- Understand the most useful information and format in which to present it for various audiences (DEOC, CDC SME’s, state and local public health, others). Do audiences prefer a summary or a detailed report.



# Next Steps

- BIC and San Diego County PH have begun to work together to conduct some retrospective analyses of BioSense data post-wildfire.
  - Characterize trends in cardiovascular and respiratory disease before, during, and after the fire.
  - Did smoke exposure exacerbate illness among those with chronic cardiovascular or respiratory disease?
  - Identify a subset of patients to interview regarding health behaviors during the wildfires.
- Academic Institutions (under the Evaluation Cooperative Agreement) are using this event as a case study on how biosurveillance systems are used during public health emergencies. Completed comprehensive reports are still pending.



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