STRATEGIES FOR MEDICAL MONITORING AND LONG-TERM RESEARCH AFTER DISASTERS: LESSONS LEARNED FROM SEPTEMBER 11

Philip Landrigan, MD, MSc, FAAP
Director, Program in Global Public Health and the Common Good
Boston College

THE SEPTEMBER 11 ATTACKS

ON THE WORLD TRADE CENTER

RESULTED IN THE GREATEST

ACUTE ENVIRONMENTAL HEALTH DISASTER

THAT EVER HAS BEFALLEN NEW YORK CITY


Dust and smoke from the fires


Dust from materials transfer
XTRA

IMMEDIATE NEEDS AFTER A DISASTER

- Exposure assessment- What were people exposed to, at what levels, and for how long
- Determine who was exposed
- Establish communication
  - Among the many response groups – local, state and federal
  - With people who have been exposed

EXPOSURE ASESSMENT AFTER 9/11

- High-altitude visualization of the plume
- Air sampling
- Dust sampling
  - Outdoor
  - Indoor

AIR SAMPLING RESULTS

- Pulverized Cement and Gypsum (pH 10-11)
- Asbestos
- Glass shards
- Heavy Metals
- Silica
- Soot
- VOC's
- Acid Mists
- Organic Products of Combustion (PAH's and Dioxins)

Lioy et al, 2002, Sampling Indoors

INDOOR DEPOSITION OF DUST AND SMOKE

Lioy et al, 2002

COMPONENTS OF WTC DUST

- Chrysotile Asbestos (0.8-3.0%) - used in construction of North Tower to 40th story
- Cement dust (pH 10.0-11.0)
- Glass fibers
- Lead and other Heavy Metals
- Polychlorinated biphenyls (PCBs)
- Pesticides
- Toxic Combustion Products
    1. Benzene – unburned jet fuel
    2. Polycyclic Aromatic Hydrocarbons (PAHs)
    3. Dioxins
    4. Diesel fumes

WHO WAS EXPOSED AFTRER 9/11?

- First responders and rescue workers – 50,000
  - Firefighters
  - Paramedics
  - Police
  - Construction/Demolition workers
  - Volunteers
  - Transit workers
  - Cleaners
- Community residents and local workers – 400,000
  - Children
  - Women
  - Office workers

THE MEDICAL AND PUBLIC HEALTH RESPONSE TO 9/11

- Provide immediate health consultations to first responders- respirators, safety education
- Disseminate information on the exposures – update as new information becomes available
- Build rosters of exposed people
- Provide clinical evaluations. Initially, these were envisioned as a one-time medical screening. But when persistence of symptoms became evident, it transitioned to ongoing medical monitoring
- Disseminate medical findings widely and update frequently
- Evidence-based education
- Secure funding – not easy

EVIDENCE-BASED EDUCATION

- Develop material for the hospital web site
- Respond to patient calls
- Respond to physician calls
- Give press interviews
  - *New York Times*
  - *Newsweek*
  - *Dan Rather*
- Make public presentations
  - Manhattan Borough President
  - Community Boards
  - Board of Education

EXAMPLE OF FINDINGS-
CUMULATIVE INCIDENCE OF HEALTH PROBLEMS

- Asthma 27.6%
- Chronic Sinusitis 42.3%
- Gastroesophageal Reflux Disease (GERD) 39.3%

- Spirometric Abnormalities 41.8%
  (3/4 are restrictive)

Rates of All Conditions are Highest in Most Heavily Exposed

LESSONS FOR THE FUTURE

- Strengthen public health infrastructure – disease tracking, lab capacity
- Prepare for the next event by training people and pre-positioning supplies
- Clarify lines of authority
- Develop communication strategies and messages before the next event
- Build partnerships for prevention

Prevention and preparedness are essential


FDNY
FDNY
FDNY