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1608a THE CONTRIBUTION OF OCCUPATIONAL MEDICINE TO EMERGENCY PREPAREDNESS: NEW YORK CITY AND 9/11

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Background Occupational exposures to hazardous materials and to high levels of psychological stress are predictable consequences of civilian disasters and result commonly in physical and mental health problems among first responders. Emergency plans must anticipate these occupational health consequences of disaster and be prepared to address them.

Goal To assess the contribution of occupational medicine to emergency response after the attacks on the World Trade Centre of September 11, 2001.

Method Historical review

Findings New York had a network of Centres of Excellence in Occupational Health in place prior to September 11, 2001. These Centres were established in 1987, supported financially by the State of New York, and focused on the prevention, diagnosis, and treatment of injuries and illnesses among workers. They were staffed by trained personnel and provided a wide range of services including occupational medicine, occupational health nursing, industrial hygiene, ergonomics, and social work services.

The New York Centres of Excellence in Occupational Health were able to provide medical care to first responders immediately after September 11, 2001. Within a few weeks they had evaluated several hundred responders – firefighters, police, paramedics, and volunteers. Persistent cough, termed ‘World Trade Centre cough’, asthma, anxiety, depression, and post-traumatic stress disorder (PTSD) were the symptoms most commonly seen in the initial post-attack period. These symptoms were most severe in the most heavily exposed responders and were more frequent among 9/11 first responders than among unexposed workers in the same trades.

Documentation of these health effects and their persistence was critical in demonstrating that the attacks on the World Trade Centre and their aftermath had produced physical and mental health effects among first responders; in establishing the need for long-term medical and epidemiologic follow-up of the first responder population; and in ensuring that this follow-up included comprehensive diagnosis and treatment of both physical and mental health conditions. Follow-up of the 9/11 responders continues to the present, is supported by the US government through the National Institute for Occupational Safety and Health (NIOSH), and has documented multiple exposure-related health problems in this population including restrictive lung disease, chronic sinusitis, gastroesophageal reflux disease (GERD), PTSD, depression, and cancer.

Conclusion Pre-positioned resources in occupational medicine are an essential component of disaster response. Emergency preparedness planning must include long-term investments in occupational and environmental health services.

1608b INDICATIONS FOR LIFETIME HEALTHCARE OF AFFECTED POPULATIONS FROM THE WORLD TRADE CENTRE AND OTHER MAJOR INTERNATIONAL DISASTERS

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Background The disasters at Seveso, Three Mile Island, Bhopal, Chernobyl, the World Trade Centre (WTC) and Fukushima had historic health and economic sequelae for large populations of workers, responders and community members.

Methods Comparative data from these events were collected to derive indications for future preparedness. Information from the primary sources and a literature review addressed:

- i. exposure assessment;
- ii. exposed populations;
- iii. health surveillance;
- iv. follow-up and research outputs;
- v. observed physical and mental health effects;
- vi. treatment and benefits; and
- vii. outreach activities.

Results Exposure assessment was conducted in Seveso, Chernobyl and Fukushima, although none benefited from a timely or systematic strategy, yielding immediate and sequential measurements after the disaster. Identification of exposed subjects was overall underestimated. Health surveillance, treatment and follow-up research were implemented in Seveso, Chernobyl, Fukushima, and at the WTC, mostly focusing on the workers and responders, and to a lesser extent on residents. Exposure-related physical and mental health consequences were identified, indicating the need for a long-term health care of the affected populations. Fukushima has generated the largest scientific output so far, followed by the WTCHP and Chernobyl. Benefits programs and active outreach figured prominently in only the WTC Health Program. The analysis of these programs yielded the following lessons:

- Know who was there;
- Have public health input to the disaster response;
- Collect health and needs data rapidly;
- Take care of the affected;
- Emergency preparedness;
- Data driven, needs assessment, advocacy.

Conclusion Given the long-lasting health consequences of natural and man-made disasters, health surveillance and treatment programs are critical for management of health conditions, and emergency preparedness plans are needed to prevent or minimise the impact of future threats.

1608c RESPIRATORY DISEASE RESEARCH IN THE WTC HEALTH PROGRAM

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The terrorist attack on 9/11/2001, and subsequent rescue, recovery, and service restoration of the World Trade Centre disaster site in New York City, created an unprecedented and unique occupational and environmental exposure that affected a large and diverse group of rescue workers and volunteers.

The workers were exposed to a mixture of poorly characterised inhaled toxicants. A variety of acute and chronic respiratory illnesses have been reported among all exposed workers, which are the subject of large scale ongoing investigation and follow up. The predominant WTC related chronic lower airway disorders have been clinically characterised as irritant-induced asthma, nonspecific chronic bronchitis, chronic bronchiolitis, and aggravated pre-existent chronic airway disease. In addition to those, several often limited case reports, case series, and small studies have suggested other associated lung diseases among those workers. Lung function surveillance, which demonstrated an exaggerated one time expiratory flow loss (about 500 ml), has shown an average expiratory flow decline in subsequent years that seems to follow age-related rates. This episode clearly invited reflection on the characterisation of chronic airway diseases, risk factors for respiratory health, and respiratory epidemiology methods.

1608d **CHANGING PHYSICIAN BEHAVIOUR – WHAT WORKS? A SNAPSHOT OF AN INTERVENTION TO IMPROVE MONITORING AND MEDICAL CARE FOR SURVIVORS AND RESPONDERS OF THE 9/11 TERRORIST ATTACKS**

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Introduction and objectives After the terrorist attacks on September 11, 2001, there was a demonstrated need to develop monitoring and treatment programs for responders and local community survivors of the events. Almost immediately, the Fire Department of the City of New York initiated a screening program for FDNY responders. The Medical Monitoring Treatment Program began to monitor law enforcement and general responders in the New York City area. The New York City Health and Hospitals group established a program for area workers, residents, and those who were in the dust or dust cloud on 9/11 – the group now referred to as ‘survivors.’

Methods At the onset of the Program, a comprehensive outreach and education strategy was created to reach potentially eligible 9/11 responders and survivors. A treatment Referral Program was established with the New York City Department of Health and Mental Hygiene, WTC Health Registry. These efforts proved successful in enrolling new members. However, a gap was identified in how information about the program and related health conditions were being disseminated to medical health professionals who were in a unique position to refer patients to the Program for care.

To reach healthcare providers the Program contracted with WebMD-Medscape, a leading online source of information for the medical community and healthcare professionals. The goals of partnering with Medscape were: to increase provider awareness about WTC Health Program screening and treatment, provide training materials to external healthcare providers to ensure consistency and quality related to screening and treatment, incentivize the use of training materials by offering CME/CE credits through a free and easy to access system, and to archive WTC Health Program knowledge.

Through the partnership with WebMD-Medscape the Program created five products:

1. After the 9/11 Terrorist Attacks: The World Trade Centre Health Program and Disaster Response
2. Health Risks Associated with 9/11 and the WTC Disaster: Lessons Learned
3. Advances in Screening and Treatment for WTC Responders and Survivors
4. Airway, Digestive, and Mental Health Comorbidities in WTC Responders and Survivors
5. Cancer in the WTC Health Program

Results

- Reached over almost 45 000 healthcare providers in 45 states, the District of Columbia, and non-continental US Territories
- 77% of learners who took the post-test indicated they will make a change in their practice and 50% of those indicated they were very committed to making this change.
- On average, 22% of test takers said they plan to modify treatment plans, 19% will change their prevention practice, 12% will incorporate different diagnostic strategies and 10% will use alternative communication methods
- On average 50% of the test takers are very committed to making the change and 32% were somewhat committed.

Conclusions

- Continuing education trainings are an effective tool for sharing research with healthcare providers.
- The five CME/CE programs credited by the WTC Health Program reached a large number of healthcare providers and led to improved awareness and treatment for 9/11-related diseases.

1449 **EBOLA VIRUS DISEASE: CHALLENGES AND CONTINGENCIES FOR NIGERIA'S OFFSHORE INDUSTRY**

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Introduction The largest outbreak of Ebola Virus Disease (EVD) was first reported by Guinea to the WHO in March 2013. From that time, the outbreak spread to Liberia, Sierra Leone, Senegal and Nigeria. The virus was exported to Nigeria in July 2014 by a business traveller from Liberia. As of September 2014, 20 cases (including the index case) had been reported with 8 deaths. However, it is the novel challenge posed by the presence of the virus to the offshore industry in Nigeria that required offshore operators to adapt and innovate emergency and crisis preparedness measures in dealing with the EVD situation. This paper shares the experience of a major offshore exploration and production player in Nigeria in operationalizing, through an incident management system approach, the different facets of preparedness for an EVD crisis within its offshore space.

Methods Primary data was gathered through direct observation, witnessing and participation in preparedness activities related to a potential offshore EVD case.

Results The incident management system approach proved to be useful and adaptable to non-traditional occupational and business risks, with regards to preparedness and response. It was however clear that industry and government have a lot more to do and learn in terms of hazard identification, risk assessment and crisis preparedness of pandemics.