Medical Surveillance in Biomedical Research

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Occupational Medicine specialists serve as de facto public health officers for the working population. A major part of this service is providing medical surveillance. Workers in the biomedical research industry, in particular, require medical surveillance for a wide variety of workplace hazards. Since the 1930s, the medical literature is replete with studies detailing the mortality and morbidity of biomedical research workers related to such hazards (especially biohazards).

Laboratory-associated illnesses often reflect the specific methodologies utilized in biomedical research (e.g., latex allergies, animal dander hypersensitivity, repetitive motion illness, blood-borne pathogens, B virus, etc). In addition, the ever changing nature of laboratory-associated hazards, and exposure to workers, reflects the industry’s tendency to use novel technologies as well as to study emerging diseases of current public health significance. Some examples of these new technologies and agents are the study of avian influenza, XDR tuberculosis, SARS, Ebola using aerobiology, non-GMP manufacturing processes and nanotechnology. As a result, the medical surveillance and management of exposures to biomedical research workers remains problematic at best and often without precedent, given the absence of prophylaxis and/or treatments for many of the current agents studied such as “select” agents, prions, and the hemorrhagic viral diseases.

The primary focus of medical surveillance in biomedical research has largely been on immunosuppression, or hypersensitivity and their effects on the worker’s risk to a wide variety of biohazards. The unique requirements for prophylaxis of biomedical research workers with various “experimental” vaccines and/or live vaccines makes it critical that these workers be surveyed for contraindications prior to receipt of these vaccines. Examples of these vaccines are vaccinia, botulinum, anthrax, hemorrhagic viral vaccines, Yellow Fever, Flumist, and Rubeola. Several conditions that need to be monitored in these workers are prior allergic reactions, pregnancy, and immunosuppression. In addition, these workers need to be monitored for adverse reactions following receipt of these vaccines.

Finally, the cutting edge nature of biomedical research necessitates that any medical surveillance program remains a “work in progress.” Medical surveillance programs for biomedical research workers that are simply “compliance driven” cannot keep up with the rapidly changing nature of the industry. In my experience, such programs have been inadequate in protecting the workers from both the newer technologies used and the novel hazards studied.

Attached is a list of the updated “guides” that I have found helpful over the past 20 years in tailoring medical surveillance programs for biomedical research companies.

References


Working Safely with Research Animals; Proceedings of the 4th National Symposium on Biosafety. J. Y. Richmond (Ed.).
Allergies in Animal Handlers

Simian Viruses

Vaccines and Immunizations

Healthcare Workers

Tuberculosis

HIV

Hazardous Drugs

U.S. Government Sites
CDC. www.cdc.gov
Emerging Infectious Diseases (Journal). www.cdc.gov/ncidod/EID/eid.htm
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html
NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html
NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html
NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html
NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html
NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS
NIH. www.nih.gov
NIOSH. www.cdc.gov/niosh/homepage.html

Non-Government Internet Sites
ABSA Medical Surveillance Course—10/25/98 Office of Health and Safety, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Mail Stop F05 Atlanta, Georgia

Guest Editorial
30333. www.cdc.gov/od/obs/biosfty/bioref.htm
American Biological Safety Association (ABSA). www.absa.org
dukeocmed.mc.duke.edu/
Vermont Safety Information on the Internet (SIRI). www.siri.org

Professional Organizations
Employee Health Services in Health Care Institutions; American
College of Occupational and Environmental Medicine. Policies and
Procedures, Section on Medical Center Occupational Health.

Books on Occupational Health or Laboratory
Safety with Material on Medical Screening
and Surveillance
American Public Health Association. (2004). Control of Commu-
tional Hazards and Disease. In Textbook of Clinical Occupa-
Control Methods. (1995). In: AHIA–Biosafety Reference Man-
ual. P. A. Heimsoth, R. R. Jacobs, & B. A. Concoby, (Eds.).
mentation of Occupational Health and Safety Programs. In
Laboratory Safety: Principles and Practices (2nd ed.). D. O.
Fleming, J. H. Richardson, J. J. Tulis, & D. Vesley, (Eds.).
Laboratory Operations—Health Effects. (1995). In CRC Hand-
book of Laboratory Safety. A. K. Furr, (Ed.). Boca Raton:
Physical and Biological Hazards of the Workplace. (1994). P. H.
Wald & G. M. Stave (Eds.). New York: Van Nostrand Rein-
hold.
Pulton, T. D. (1997). Collaborating with the Occupational Physi-
Preventing Occupational Disease and Injury. (1991). Wash-
Welter, E. S. (1988). The Role of the Primary Care Physician in
Occupational Medicine: Principles, Practical Observations,
and Recommendations. In Occupational Medicine: Prin-
ciples and Practical Applications. C. Zenz (Ed.). New York:

Laboratory-Acquired Infection—Reviews
Butterworth Heinemann.
Five Year Review of Laboratory-Acquired Human Infections
at the National Animal Disease Center. American Industrial
safety. Clinical Microbiology Reviews, 8, 389-405.

Medical Screening and Surveillance—
Journal Articles
Occupational Risks (SENSOR): The Concept. American Jour-
in Occupational Illness and Injury. American Journal of Public
Health, 79, 9-11.
Ehrenberg, R. L. (1979). Use of Direct Surveys in the Surveil-
lance of Occupational Injury and Illness. American Journal
Standard Questionnaire for Occupational Health Research.
Large and Small Laboratory Animals. Infectious Disease Clinics
of North America, 5, 131-163.
lance in Occupational Disease. American Journal of Public
(1986). Medical Screening in the Workplace. Journal of Occu-
pational Medicine, 28, 547-552.
Miller, L., McElvaine, M. D., McDowell, R. M., & Ahl, A. S.
Health Events: An Updated List for Physician Recognition
and Public Health Surveillance. American Journal of Industrial
Medicine, 19, 775-799.
Samuels, S. W. (1986). Medical Surveillance. Biological, Social,
and Ethical Parameters. Journal of Occupational Medicine, 28,
572-577.
Schilling, R. S. F. (1998). The Role of Medical Examination in
Protecting Worker Health. Journal of Occupational Medicine,
28, 553-557.
Surveillance of Occupational Disease. American Journal of
Industrial Medicine, 79, 58-60.
Work with Research Animals—Risk Assessment, Surveillance,
Exposure Management General National Research Counci-
(1997). Occupational Health and Safety in the Care and Use of
Zoonoses and Communicable Diseases Common to Man and
Animals. (1987). P. N. Acha, & B. Sayres, (Eds.). Washing-
ton, DC: Pan American Health Organization.