

Protecting Healthcare Workers from Respiratory Infections

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The medical approach to prevention is predicated on diagnosis. The use of vaccines and antibiotics requires knowledge of the specific infectious agents. There are considerable lead-times from outbreak to diagnosis, to pharmaceutical R&D, to large-scale production. Alternative and effective means of **primary protection** must be available promptly, at the onset of an outbreak, at its source, and at all other sites of potential exposure.

Respiratory pathogens are predominantly airborne. The non-medical interventions therefore, must by necessity comprise the physical modalities: appropriately engineered ventilation/filtration systems, isolation and containment measures, and PPE. Organisms that are not inhaled will not cause disease; irrespective of their pathogenicity.

In the post-war era, the ready availability of vaccines and antibiotics had lowered the risks of exposures, but lately they have proven ineffective against the emergence of new strains and zoonoses. The recent illnesses and deaths due to SARS, Legionella, MDR-TB, and Avian Flu demand more immediate and effective protection for frontline HCW's.

Biosafety experts, industrial hygienists, aerosol physicists, ventilation engineers, and occupational health experts must be in the forefront of pandemic prevention and control. They must be integral to all decision-making committees. They must be exponents for scientifically validated, **evidence-based** preventative measures that would be effective against both the known and newly emerging respiratory pathogens. They must assume leadership roles, not only in developing air-handling/treatment systems and respirators, but also in advocating for their acceptance and utilization by the healthcare community as the 1st line of defense against airborne infectious diseases.

I will describe some illustrative examples regarding the current system's shortcomings; errors, hubris, misadventures, jurisdictional confusion, and lack of rigor in practice, within the context of nosocomial Q-fever, SARS, TB, and varicella, the recent smallpox and anthrax scares, Legionella in a nursing home, New Jersey's "mock" plague epidemic, Avian Flu, and Pandemic planning.