ABOUT INFECTIOUS DISEASES

• While many organisms live in and on humans, and are normally harmless or even helpful, some can cause disease under certain conditions. They do so either by disrupting the body’s normal processes or by stimulating the immune system to produce a defensive response, resulting in high fever, inflammation, and other symptoms.

• Some infectious diseases can be passed from person to person through contact with bodily fluids, coughing, sneezing, and other methods. Others are transmitted from insect or animal bites, or by ingesting contaminated food or water or other environmental exposures.

• Many infectious diseases can become difficult to control, if the infectious agents develop a resistance to commonly used drugs. Bacteria, for example, can accumulate mutations in their DNA, or acquire new genes that allow them to survive contact with antibiotics that would normally kill them.

• VA has determined that nine infectious diseases are related to military service in the first Gulf War, Iraq, and Afghanistan. They include malaria, brucellosis, campylobacter jejuni, coxiella burnetli (Q fever), mycobacterium tuberculosis, nontyphoid salmonella, shigella, visceral leishmaniasis, and west Nile virus.

VA RESEARCH ON INFECTIOUS DISEASES: OVERVIEW

• VA researchers are advancing the understanding, prevention, and treatment of numerous infectious diseases, ranging from the common cold to major public health threats such as tuberculosis, AIDS, hepatitis C, and influenza.

• A number of effective new preventive strategies, vaccines, and drugs for infectious diseases have been developed by VA investigators.

• Some researchers are focusing on infectious diseases that may endanger American troops serving abroad, such as malaria and leishmaniasis. Others are searching for new approaches to treat infectious diseases, focusing on how pathogens change and drug resistance evolves.

SELECTED MILESTONES AND MAJOR EVENTS

1946 – Developed and tested effective therapies for tuberculosis through multicenter clinical trials that led to the development of the VA Cooperative Studies Program

2005 – Demonstrated the effectiveness of a new vaccine for shingles, a painful skin and nerve infection affecting older adults

2011 – Published findings showing a 60 percent or greater decrease in MRSA infections from a VA-wide infection control initiative

2014 – Learned that treatment for pneumonia that included the antibiotic azithromycin (Zithromax) was associated with a significantly lower risk of death and a slightly increased risk of heart attack

2015 – Found that patients who received antiretroviral therapy within a year of their infection were half as likely to develop AIDS, compared with those who waited longer

2016 – Determined that a hospital infection-control program aimed mainly at methicillin-resistant Staphylococcus aureus (MRSA) can also significantly reduce transmission of bacteria that cause infections such as pneumonia, blood infections, surgical infections, and meningitis.

RECENT STUDIES: SELECTED HIGHLIGHTS

• Treatment for pneumonia that included the antibiotic azithromycin (Zithromax) compared with other antibiotics was associated with a significantly lower risk of death and a slightly increased risk of heart attack. Researchers from several VA facilities concluded there is a net benefit associated with azithromycin use in patients hospitalized for pneumonia. (Journal of the American Medical Association, June 4, 2014)
VA researchers are advancing the understanding, prevention, and treatment of numerous infectious diseases, ranging from the common cold to major public health threats such as tuberculosis, AIDS, hepatitis C, and influenza.

• Patients who received antiretroviral therapy within a year of their infection were half as likely to develop AIDS, compared with those who waited longer. They were also more likely to achieve and maintain a normal level of infection-fighting T-cells. A study by researchers from the South Texas VA Healthcare System and the University of Texas contradicted traditional HIV treatment methodology, which encourages physicians to wait until patients reached certain infection thresholds before recommending antiretroviral therapy. (JAMA Internal Medicine, January 2015)

• An algorithm to help hospitals and public health officials determine the earliest stages of flu season has been developed by researchers with VA and other health care institutions throughout the nation. The algorithm, which researchers call the Above Local Elevated Respiratory Illness Threshold (ALERT) uses routine information, such as the number of influenza cases confirmed per week in a region, to determine where and when the flu needs to be combatted. Having this information could help public health officials preserve resources while combating the virus. (Clinical Infectious Diseases, Feb. 15, 2015)

• In 12 minutes, a pulsed xenon ultraviolet (UV) light system could disinfect a hospital room as well as a human can. Before and after UV disinfection, researchers from the Central Texas Veterans Health Care System took samples of five “high-touch” surfaces in 38 patient rooms, including the patient call button, bedrail, and tray table, as well as the handrail and toilet in the restroom. They found that the UV method cut the number of bacterial colonies per room by about 70 percent, roughly the same level of effectiveness as manual disinfection. (American Journal of Infection Control, April 1, 2015)

• Giving spores of nontoxic C. difficile by mouth can stop repeated bouts of C. difficile infection. An international team of researchers led by investigators with the Edward Hines, Jr. VA Hospital in Illinois randomly assigned 168 adult patients with C. difficile infections who had been treated for their infection to receive doses of either 10,000 or 10 million spores per day of nontoxic C. difficile in liquid form for 7 or 14 days, or to receive an identical-looking placebo. Statistically significant reductions of relapses in infection were shown in those who received any dose of nontoxic C. difficile; the best results were shown in those who received 10 million spores a day for seven days. C. difficile is an intestinal bacterial infection that is difficult to treat using standard antibiotic treatment, because it has a very high recurrence rate. (Journal of the American Medical Association, May 5, 2015)

• A procedure that dates back thousands of years can be an effective method for battling C. difficile infections. The procedure, called fecal transplantation, involves removing stool containing healthy bacteria from a donor and inserting it into a sick patient. VA researchers and researchers with the University of Minnesota found that fecal transplantation proved successful in treating 85 percent of patients with recurring infections, and that such transplantation is a safe and effective way to treat recurrent infections. (Annals of Internal Medicine, May 5, 2015)

For more information on VA studies on infectious diseases and other key topics relating to Veterans’ health, please visit www.research.va.gov/topics