National Institute of Allergy and Infectious Diseases
Leading research to understand, treat, and prevent infectious, immunologic, and allergic diseases.

Biodefense and Emerging Infectious Diseases

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Help people who are suffering from chronic, serious, or life-threatening illnesses related to biodefense and emerging infectious diseases by volunteering for NIAID clinical studies on ClinicalTrials.gov.

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Medical Countermeasures Enterprise Review

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NIAID Emerging Infectious Diseases/Pathogens

Emerging infectious diseases can be defined as infectious diseases that have newly appeared in a population or have existed but are rapidly increasing in incidence or geographic range, or that are caused by one of the NIAID Category A, B, or C priority pathogens.

NIAID's Emerging Infectious Diseases/Pathogens category includes Biodefense Research and Additional Emerging Infectious Diseases/Pathogens.

NIAID Biodefense Research

NIAID Category A, B, and C Priority Pathogens

NIAID's pathogen priority list is periodically reviewed and is subject to revision in conjunction with our federal partners, including the U.S. Department of Homeland Security, which determines threat assessments, and the Centers for Disease Control and Prevention, which is responsible for responding to emerging pathogen threats in the United States.

Category A pathogens are those organisms/biological agents that pose the highest risk to national security and public health because they

- Can be easily disseminated or transmitted from person to person
- Result in high mortality rates and have the potential for major public health impact
- Might cause public panic and social disruption
- Require special action for public health preparedness

Category A Priority Pathogens

- *Bacillus anthracis* (anthrax)
- *Clostridium botulinum* toxin (botulism)
- *Yersinia pestis* (plague)
- Variola major (smallpox) and other related pox viruses
- *Francisella tularensis* (tularemia)
- Viral hemorrhagic fevers
  - Arenaviruses
    - Junin, Machupo, Guanarito, Chapare (new in fiscal year (FY) 14), Lassa, Lujo (new in FY 14)
  - Bunyaviruses
    - Hantaviruses causing Hanta Pulmonary syndrome, Rift Valley Fever, Crimean Congo Hemorrhagic Fever
  - Flaviruses
    - Dengue
  - Filoviruses
    - Ebola

        - Marburg

Category B pathogens are the second highest priority organisms/biological agents. They

- Are moderately easy to disseminate
- Result in moderate morbidity rates and low mortality rates
- Require specific enhancements for diagnostic capacity and enhanced disease surveillance

Category B Priority Pathogens

- *Burkholderia pseudomallei* (melioidosis)
- *Coxiella burnetii* (Q fever)
- *Brucella* species (brucellosis)
- *Burkholderia mallei* (glanders)
- *Chlamydia psittaci* (Psittacosis)
- Ricin toxin (Ricinus communis)
- Epsilon toxin (Clostridium perfringens)
- Staphylococcus enterotoxin B (SEB)
- Typhus fever (*Rickettsia prowazekii*)
- Food- and waterborne pathogens
    - Bacteria
        - Diarrheagenic *E.coli*
        - Pathogenic Vibrios
        - *Shigella* species
        - Salmonella
        - *Listeria monocytogenes*
        - *Campylobacter jejuni*
        - *Yersinia enterocolitica*
    - Viruses
        - Caliciviruses
        - Hepatitis A
    - Protozoa
        - *Cryptosporidium parvum*
        - *Cyclospora cayatanensis*
        - *Giardia lamblia*
        - *Entamoeba histolytica*
        - *Toxoplasma gondii*
        - *Naegleria fowleri* (new in FY 14)
        - *Balamuthia mandrillaris* (new in FY 14)
    - Fungi
        - Microsporidia
- Mosquito-borne encephalitis viruses
    - West Nile virus (WNV)
    - LaCrosse encephalitis (LACV)
    - California encephalitis
    - Venezuelan equine encephalitis (VEE)
    - Eastern equine encephalitis (EEE)
    - Western equine encephalitis (WEE)
    - Japanese encephalitis virus (JE)
    - St. Louis encephalitis virus (SLEV)

Category C pathogens are the third highest priority and include emerging pathogens that could be engineered for mass dissemination in the future because of

- Availability
- Ease of production and dissemination
- Potential for high morbidity and mortality rates and major health impact

Category C Priority Pathogens

- Nipah and Hendra viruses
- Additional hantaviruses
- Tickborne hemorrhagic fever viruses
    - Bunyaviruses
        - Severe Fever with Thrombocytopenia Syndrome virus (SFTSV), Heartland virus
    - Flaviruses

        - Omsk Hemorrhagic Fever virus, Alkhurma virus, Kyasanur Forest virus
- Tickborne encephalitis complex flaviviruses
    - Tickborne encephalitis viruses
    - European subtype
    - Far Eastern subtype
    - Siberian subtype
    - Powassan/Deer Tick virus
- Yellow fever virus
- Tuberculosis, including drug-resistant TB
- Influenza virus
- Other Rickettsias
- Rabies virus
- Prions
- Chikungunya virus
- Coccidioides spp.
- Severe acute respiratory syndrome associated coronavirus (SARS-CoV), MERS-CoV, and other highly pathogenic human coronaviruses (new in FY 14)
- Antimicrobial resistance, excluding research on sexually transmitted organisms, unless the resistance is newly emerging*
    - Research on mechanisms of antimicrobial resistance
    - Studies of the emergence and/or spread of antimicrobial resistance genes within pathogen populations
    - Studies of the emergence and/or spread of antimicrobial-resistant pathogens in human populations
    - Research on therapeutic approaches that target resistance mechanisms
    - Modification of existing antimicrobials to overcome emergent resistance
- Antimicrobial research, as related to engineered threats and naturally occurring drug-resistant pathogens, focused on development of broad-spectrum antimicrobials

***NIAID Category C Antimicrobial Resistance—Sexually Transmitted Organisms Excluded**

- Bacterial vaginosis, *Chlamydia trachomatis*, cytomegalovirus, *Granuloma inguinale*, *Hemophilus ducreyi*, hepatitis B virus, hepatitis C virus, herpes simplex virus, human immunodeficiency virus, human papillomavirus, *Treponema pallidum*, *Trichomonas vaginalis*

Immunological Studies

Immunology studies that advance our understanding of host defenses applicable to the biodefense effort, for example

- Adjuvants
- Innate Immunity
- Adaptive Immunity
- Mucosal Immunity

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Additional Emerging Infectious Diseases/Pathogens

- Acanthamebiasis
- Anaplasmosis (new in FY 14)
- Aspergillus (new in FY 14)
- Australian bat lyssavirus
- *Babesia*, atypical
- *Bartonella henselae*
- BK virus (new in FY 14)
- *Bordetella pertussis* (new in FY 15)
- *Borrelia miyamotoi* (new in FY 14)
- *Clostridium difficile*
- *Cryptococcus gattii* (new in FY 14)
- Ehrlichiosis
- *Enterococcus faecium* and *faecalis* (new in FY 14)
- Enterovirus 68 (new in FY 15)
- Enterovirus 71
- Hepatitis C (new in FY 14)
- Hepatitis E (new in FY 14)
- Human herpesvirus 8
- Human herpesvirus 6
- JC virus (new in FY 14)

- Leptospirosis (new in FY 14)
- *Lyme borreliosis*
- Mucormycosis (new in FY 14)
- Mumps virus
- Poliovirus (new in FY 15)
- Rubeola (measles) (new in FY 14)
- *Streptococcus*, Group A
- *Staphylococcus aureus*

Notes:
* This list was created for the purpose of extramural and intramural program management within NIAID's biodefense/EID mission and does not represent the complete scope of biodefense and emerging infectious disease.
** HIV/AIDS is excluded.

Last Updated February 25, 2015