Infectious Disease Workgroup
DRAFT Starter List of Research Priorities

Purpose of the Starter List

The Starter List is for discussion purposes at this stage of the CDC Research Agenda Development Process. It is a DRAFT listing of broad research concepts that are not yet integrated into a specific research agenda for CDC. Suggestions and modifications to the Starter List will be used to develop a draft CDC-wide Research Agenda that addresses critical research needs and health protection goals.

There are seven focus areas on the Starter List, one corresponding to each of the six Research Agenda Development Workgroups, plus a seventh for cross-cutting research that serves as a foundation for many types of public health research and programs.

You will find the Starter List for Infectious Diseases research ideas on the following pages of this document. The Starter List for other focus areas is also available on the OPHR Website (see URL below).

Your opportunities for input:

You will have two opportunities for input to the CDC-Wide Research Agenda development process:

1) **Commenting on the Starter List**

We welcome your input on both the Starter List and the CDC-wide Research Agenda development process. We will be accepting public comments on the Starter List and process through April 15, 2005. You can provide suggestions and comments by visiting the following URL:

http://www.rsvpbook.com/custom_pages/792_CDC_comments.php

2) **Commenting on the Public Comment Draft**

Later this summer, you will have another opportunity to provide input by offering comments on the Public Comment Draft of the CDC-wide Research Agenda. The Public Comment Draft will be published in the *Federal Register* and on the CDC Office of Public Health Research (OPHR) Website below. The target date for release of the public comment draft is mid-June 2005.

The OPRH website will also provide periodic updates on the Research Agenda development process. Please visit our Website at:

http://www.cdc.gov/od/ophr/cdcra.htm

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Theme ID#	Research Theme Title and Description	Examples of Research Activities
I 1	**Antimicrobial Resistance** Develop, evaluate and implement strategies to prevent the emergence and transmission of antimicrobial resistance and antimicrobial resistant pathogens in the community, healthcare settings and agriculture.	• Improve appropriate use of antimicrobials; • Improve infection control methods in healthcare settings and elsewhere; • Conduct clinical trials of existing drugs to expand their utility; • Conduct clinical trials of novel therapeutic drugs; and • Improve detection of drug resistance.
I 2	**Applied Genomics** Investigate human immune and other genomic factors associated with improved or impaired responsiveness to biomedical public health interventions in order to reduce the acquisition, transmission and progression of specific infectious diseases.	• Identify mechanisms by which individuals develop adverse reactions or side-effects to certain drugs; and • Tailor drug therapy based on these mechanisms to reduce the incidence of drug resistance.
I 3	**Behavioral Sciences, Health Promotion and Prevention Research** Develop, evaluate, and implement behavioral and social science interventions, public health education programs, and health communication research at multiple levels (the individual, interpersonal, community and institutional levels) for existing and emerging infectious diseases.	• Identify, understand, and characterize behaviors and determinants (gender, health-related stigma, poverty, and access to healthcare) that put people at risk for infection and disease routinely and during outbreak events; • Examine social, cultural, and physical factors that directly or indirectly influence a person's risk of infection and disease; and • Conduct participatory research to improve the effectiveness of interventions to influence behaviors to reduce risk of infection and disease.
I 4	**Disease Elimination** Reduce, eliminate, and/or eradicate identified priority infectious diseases.	• Develop tools and strategies that improve diagnosis, therapeutics, prevention, and global surveillance of diseases that have potential for elimination.

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I 5	**Economic Analyses of Infectious Diseases** Improve understanding of the economics of controlling and preventing infectious disease.	• Determine the burden imposed by infectious diseases; • Measure the costs of delivering prevention interventions such as vaccines; and • Conduct cost-effectiveness analyses of interventions (existing and potential) to allow a degree of direct comparison among interventions.
I 6	**Environmental Microbiology** Improve understanding of microbial pathogens in the environment.	• Establish the presence of threat agents in the environment; • Estimate infection risk to humans; and • Implement risk reduction strategies for contaminated environments.
I 7	**Health Disparities and Infectious Diseases** Develop, evaluate and implement strategies to reduce and ultimately eliminate disparities in health associated with infectious diseases.	• Improve identification, understanding and characterization of disparities (differences) in rates of infectious diseases; • Examine structural factors (e.g., physical, social, cultural) that directly or indirectly influence a person's risks of infection and disease; and • Improve the effectiveness of interventions within populations disproportionately affected by infectious diseases.
I 8	**Immunization Services Delivery Research** Develop, evaluate, implement, and disseminate effective strategies to encourage all Americans to seek vaccination while optimizing immunization delivery.	• Develop, evaluate, and monitor effective vaccination programs for adolescents (especially for new vaccines), the elderly, and high-risk adults; • Develop programs that reduce health disparities in vaccine coverage; • Adapt the "Guide to Community Preventive Services" recommendations for larger populations; • Conduct health economics research of various types of vaccine programs; • Find ways to better match influenza vaccine supply and demand; and • Assess the accuracy and usefulness of vaccine registries.

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I 9	**Infectious Disease and Chronic Disease Associations** Identify and improve understanding of the role of infectious agents in chronic disease.	• Define the portion of chronic diseases caused by infectious agents; • Identify populations at risk; • Develop appropriate interventions for high-risk populations; and • Monitor and demonstrate the impact of intervention strategies on infections and their chronic outcomes.
I 10	**Infectious Disease Diagnostic Methods** Improve infectious disease diagnosis to direct and facilitate appropriate therapy and enhance disease surveillance and response activities.	• Develop rapid, low-cost, cost-effective, sensitive, and specific etiologic diagnostic tests for antimicrobial resistant and vaccine-preventable infections.
I 11	**Infectious Diseases of Vulnerable Populations** Develop, evaluate, and implement strategies to better monitor, assess risks, and reduce the impact of infectious diseases on populations at high risk for infectious diseases for biologic or other reasons.	• Monitor and evaluate infectious disease prevention and control interventions in conditions such as war or disasters; and • Monitor and evaluate interventions for at-risk populations, such as recent immigrants and those returning from abroad, jailed inmates, occasional drug-users, methamphetamine users (for HIV/STD), and solid organ transplant recipients.
I 12	**Infectious Disease Surveillance and Response** Enhance infectious disease surveillance and response systems by collecting and analyzing information quickly and accurately.	• Examine advances in information, microbiologic, and genetic technology, which could improve the timeliness and integration of data collection; and • Link laboratory and health information to improve epidemiology research and, the design and evaluation of interventions.
I 13	**Microbial Threats and Emerging Infections** Improve identification and understanding of emerging pathogens.	• Detect infectious agents in tissue and blood using new technologies; • Develop methods for rapid detection of all known families of bacteria, viruses, parasites, and fungi; • Detect and prevent zoonotic diseases (i.e., diseases that can be transmitted from animals to humans); • Detect illness among donors and recipients of blood, organ and other tissues; and • Evaluate healthcare preparedness.

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I 14	**Patient Safety** Enhance patient safety through the reduction of medical errors.	• Improve detection and prevention of adverse events associated with invasive medical devices, invasive medical procedures, biologic products, and medication use; • Develop new strategies to improve adherence to evidence-based infection control recommendations and decrease healthcare-associated infections and antimicrobial resistance; and • Improve donor screening, tissue storage, and detection of infections associated with the transplantation of tissues and organs (i.e., allograft-associated infections).
I 15	**Perinatal and Neonatal Infectious Diseases** Improve research on diagnostic, surveillance, and prevention strategies to reduce health disparities related to infectious diseases affecting pregnant women and newborns.	• Develop point-of-care diagnostic methods; • Characterize strategies for preventing perinatal infections such as Hepatitis B and C, listeriosis, Group B streptococcus, and toxoplasmosis; and • Assess the impact of existing prevention tools.
I 16	**Vaccine Epidemiology and Surveillance** Conduct epidemiologic research and improve surveillance to better define the burden of vaccine-preventable diseases (VPD) and to develop more efficient coverage strategies for both new and existing vaccines.	• Determine the value of a potential universal (all-ages) influenza vaccine recommendation; • Define disease burden in at-risk groups; • Develop and evaluate novel methods of controlling pertussis (whooping cough); • Explore strategies to achieve control of infection for several VPD by using indirect means, i.e., those that primarily affect people not at high-risk; • Determine the relative value of mass vaccination and other measures in responding to emerging new diseases; • Determine the optimal timing for re-vaccination of adolescents to compensate for decreasing immunity; and • Determine whether the elderly are at increased risk of varicella zoster (shingles) because they are less exposed to endemic varicella than previous generations, due to the successful childhood vaccination program.

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I 17	**Vaccine Safety** Develop and evaluate methods for ensuring safe vaccination and effective communication of the benefits and risks of vaccines to parents, providers, and the public.	• Develop more efficient means of detecting and predicting adverse events; • Determine personal factors that predispose individuals to adverse vaccine events; • Determine behavioral and social factors resulting in low vaccination acceptance rates for certain vaccines among subpopulations; • Identify and evaluate methods of effectively communicating vaccine risk to the public; and • Develop and test improved technologies for safer vaccine administration.
I 18	**Vaccine Supply** Develop strategies to ensure sufficient supply and appropriate distribution of vaccines.	• Develop, evaluate, and disseminate strategies that enhance demand for vaccines, particularly among adults, adolescents, and underserved racial/ethnic groups; • For new vaccines, develop ways to prioritize based on disease burden, economic analysis of existing markets, and new products available; • Develop and evaluate regulatory strategies for streamlining new vaccine review and approval without compromising vaccine safety or efficacy; • With NIH, develop more efficient means of vaccine production; • Develop and evaluate strategies to more efficiently track vaccine supply from production to providers; • Devise and test strategies to encourage industry interest in manufacturing vaccines; • Devise and test strategies to maintain redundant vaccine suppliers to ensure sufficient vaccine inventory; and • Evaluate the effectiveness of antigen-sparing strategies.