Clostridium difficile Infection (CDI) Surveillance

Request for OMB Approval of a New Data Collection
November 2010

Contact:
Paulette Ford-Knights
Office of Policy and Planning
National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
Centers for Disease Control and Prevention
1600 Clifton Road, N.E., MS D-76
Atlanta, Georgia 30333
Phone: (404) 639-4895
Fax: (404) 639-4146
Email: pbf7@cdc.gov

Clostridium difficile Infection (CDI) Surveillance
Request for OMB Approval of a New Data Collection

Collections of Information Employing Statistical Methods

1. Respondent Universe and Sampling Methods

Cases will be identified by laboratory surveillance for toxin-positive *C. difficile* specimens from clinical laboratories in the CDI EIP surveillance area. The number of study participants to be enrolled will be dependent on the number of positive, non-recurrent and non-duplicate specimens received and meeting other inclusion criteria. All patients over the age of one year and of any health status will be eligible.

The total population of CDI surveillance is approximately 10.4 million persons. The table below illustrates the population under surveillance for each EIP site as of November 2010.

State	Surveillance sites	Estimated CDI Surveillance Population
CA	San Francisco County	815,358
CO	Adams, Arapahoe, Denver, Douglas, Jefferson Counties	2,430,207
CT	New Haven County	846,101
GA	Clayton, Cobb, DeKalb, Douglas, Fulton, Gwinnett, Newton and Rockdale Counties	3,893,877
MD	Washington, Frederick, Cecil, Kent, Queen Anne's, Caroline, Talbot, Dorchester, Somerset, Wicomico, Worcester Counties	813,866
MN	Stearns, Todd, Benton, Morrison Counties	245,900
NY	Monroe County	733,703
OR	Klamath County	66,247
TN	Davidson County	635,710
TOTAL	---------	10,480,969

*Populations were retrieved from the National Center for Health Statistics bridged-race vintage 2006 postcensal file and 2005 U.S. Census Data

Crude population estimates for community- and healthcare facility-onset CDI were hypothesized, loosely based on estimates of incidence from a retrospective cohort of hospital based CDI in North Carolina in 2005[6]. These estimates were used to calculate workload volumes and disease burden in the absence of available data (refer to Attachment D).

	Estimated incidence per year (per 100,000)	Estimated number of cases reported to EIP program per year
All EIA toxin positives	120	12,480
Contribution of duplicate episodes	10	1,040
Contribution of recurrent episodes and out-of-catchment specimens	20	2,080
Incident cases	90	9,360
HCFO	50	5,200
CO	40	4,160
CO-HFCA	20	2,080
CA	20	2,080

CDI cases will be identified using positive *C. difficile* toxin assay data from all healthcare facility-based clinical laboratories as well as outpatient diagnostic clinical laboratories serving the population under surveillance. Each clinical laboratory in the surveillance area will regularly provide laboratory line listings of all positive *C. difficile* test results to the local EIP sites. Information on additional positive specimens from the same patient will be recorded for the purpose of ascertaining and tracking recurrent or duplicate episodes, as well as, new incident cases (i.e. greater than eight weeks after the last positive *C. difficile* specimen). Case report forms will not be completed on recurrent or duplicate episodes, and for patients determined to reside outside catchment area or who are < 1 year of age. Distinction between infection and colonization in persons aged < 1 year of age has not been well described in the literature.

Application of sampling at selected EIP sites. Two sites, Colorado and Georgia, which make up approximately 50% of the total population of the CDI surveillance area, anticipate relatively high volume of positive *C. difficile* toxin specimens. These sites will apply a systematic sampling strategy (i.e. 1:3 incident specimens) after determining which specimens qualify as incident *C. difficile* stool specimens (i.e. specimens from the same patient greater than 8 weeks after the last positive specimen), but prior to engaging in steps to ascertain patients' residency status. Patients, who had their incident specimen sampled, will have their residency status ascertained; and those falling into the catchment area will be classified as CDI cases and undergo primary and secondary case classification as described above.

Application of sampling of HCFO cases at all EIP sites. Among CDI cases classified as HCFO, 1 in 10 will be randomly selected for case report form completion. Since the epidemiology of HCFO cases has been described elsewhere[4,5], these cases will be sampled in order to reduce the burden of data collection. In contrast, a case report form will be completed on all CO-CDI cases. From these data, CO-CDI cases will be classified as either CO-HCFA or putative CA-CDI cases.

2. Procedures for the Collection of Information

EIP site surveillance officers are employees of the State Health Department or state agents. They will collect from clinical laboratories in the surveillance area, on a weekly

or monthly basis, a line list of positive *C. difficile* toxin assay test results and patient identifying information. Each positive assay result will be cross-checked with a dataset containing previous line lists of positive *C. difficile* toxin tests to determine if episodes are duplicate, recurrent or incident CDI case. The addresses of possible incident CDI case-patients will be reviewed to determine if they reside within the surveillance catchment area. Those patients residing outside of the catchment area will be excluded from further investigation but captured as a count in a separate database if individual sites need to track this information. CDC will not receive any information on individuals who reside outside of surveillance catchment area.

All CDI cases identified will be evaluated by EIP personnel for initial case classification using data from the laboratory line list. Secondary case classification will be performed using electronic health data and/or chart review. A detailed review of the medical record will be necessary to complete the full case report form on case-patients. Demographic data, clinical features, key exposure variables, co-morbidities and outcomes will be collected (Attachment C). A case report form will be completed by trained surveillance staff for selected HCFO CDI cases and for all CO CDI cases.

CDI cases classified as putative community-associated CDI (CA-CDI) will undergo a health interview to collect supplemental information on healthcare, medication, food, and environmental exposures that might not be captured in the medical records (Attachment D). Health interviews will be conducted by trained staff at EIP sites in either English or Spanish. At sites where it is required, an infection control specialist will call patients to get their permission to be contacted for an interview by the EIP staff (Attachment E). EIP staff will make 10 attempts to reach eligible CA-CDI case-patients. These 10 attempts will include no answer and leaving a message. No further attempts will be made if patients indicate that they not wish to participate in the health interview. Prisoners will not be eligible for health interview.

For some states, where it is required by their local IRBs, the primary physician will be notified by letter (Attachment F) that EIP personnel will be contacting the case-patient about their recent *C. difficile* infection. At states where it is required, physician notification and paper consent form will be sent to the putative CA-CDI case-patient prior to conducting a health interview.

For states where *C.difficile* is reportable, the Privacy Rule allows for covered entities to disclose protected health information to public authorities (including the states) without individual authorization under the provisions for public health practice. In the states where the illness is reportable, state public health statutes allow for the contact of individuals to gather information to protect public's health.

For states where *C. difficile* is not reportable, the Privacy Rule allows covered entities to disclose protected health information without individual authorization when criteria for a waiver are met. According to Federal regulations for the protection of human subjects in research under 45 CFR 46.109 and 46.111, IRBs reviewing proposed research protocol have the authority to allow researchers to contact individuals to invite them to participate

in research.

3. Methods to Maximize Response Rates and Deal with Nonresponse

This surveillance project is being conducted through the EIP infrastructure in which each of the 10 sites has established relationships with laboratories and healthcare facilities within their defined catchment areas. Personnel at these sites have regular contact with the facilities and encourage all facilities and laboratories to participate. Audits of the clinical laboratories in the surveillance area will be performed 1-2 times per year by local EIP personnel to ensure complete ascertainment of cases. HIPAA regulation allows for the disclosure and use of protected health information for research purposes without individual authorization because criteria for a waiver were met. CDC personnel will not perform these audits. Completeness and correctness of data collected should be assessed and cross-checked regularly to identify and address issues with the data collection or the application of surveillance definitions to ensure response. CDC staff will perform site visits to the EIP sites on a yearly basis to evaluate compliance with standard operational procedures.

4. Tests of Procedures or Methods to be Undertaken

To understand the logistics and resources required to initiate and maintain a longitudinal, multi-site CDI surveillance program, a pilot surveillance study was conducted through CDC's Foodborne Diseases Active Surveillance Network (FoodNet). This pilot study aimed to identify strengths and challenges to conducting CDI surveillance in three hospitals located at two EIP sites (New York and Connecticut) over a three month period. The methodology, case report form, and health interview questionnaire described above take into account the findings from this pilot project[7].

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

Contact information for the statistician consulted for project design and data analysis is as follows:

Jonathan R. Edwards, MStat
Leader, Statistics Team
Surveillance Branch, Division of Healthcare Quality Promotion
Centers for Disease Control and Prevention
1600 Clifton Rd, NE
Atlanta, GA 30333
(404) 639-4177
Email: JREdwards@cdc.gov

Data will be collected by EIP personnel and by local facility staff, as described previously. Identification of the specific EIP surveillance officers and local facility staff members who will participate in training and data collection activities is at the discretion of the EIP site or the facility, respectively.