American Recovery and Reinvestment Act
Connecticut Department of Public Health (DPH)
Project Abstract

EIP FOA# CI09-90701ARRA09: Healthcare-Associated Infections Program – Innovations in the Surveillance of Multidrug-Resistant Organisms and Healthcare-Associated Infections

Proposed Connecticut application budget: Personnel: $442,247 (96%); Supplies etc.: $18,260 (4%); Total: $460,507

Planned Connecticut job creation: One FTE Epidemiologist 3, ½ FTE Connecticut Career Trainee (CCT) at the Connecticut Department of Public Health (DPH). The Epidemiologist 3 would be a retained position, and the CCT will be a temporary (two-year only) position.

Background: In this project, the Connecticut Emerging Infections Program (EIP) will address the increased public health threat posed by healthcare associated infections by enhancing our statewide EIP activities in collaboration with the CDC EIP network that performs enhanced surveillance and research on infectious diseases of particular public health concern. With additional staff, the Connecticut EIP will: promote the use of the CDC National Healthcare Safety Network (NHSN) by healthcare facilities (especially those facilities involved in prevention collaboratives), use NHSN for enhanced surveillance of multidrug-resistant organisms (MDROs) and *Clostridium difficile*, study interventions that may interrupt the transfer of these diseases between healthcare facilities, and evaluate methicillin-resistant *Staphylococcus aureus* (MRSA) in non-hospital settings. The Connecticut EIP will also facilitate hospital participation in a national survey of the scope of healthcare-associated infections (HAI) in hospitals.

Narrative

Background and Need

Current level of HAI surveillance and prevention activity in Connecticut

The National Healthcare Safety Network (NHSN) is used for Healthcare Associated Infections (HAI) surveillance and mandatory public HAI reporting. In Connecticut, only one NHSN "event" is reported. That event is Central Line-Associated Blood Stream Infections (CLABSI) from one medical or medical-surgical Intensive Care Unit (ICU) in each of the 30 acute care hospitals in the state and each of the three pediatric ICUs. This data is reported to the Department of Public Health (DPH) via the NSHN group function. Data has been collected into NSHN since January 2008 and the first report on the data to the legislature and the public was made in October 2008. The report was posted on the state health department website, and will be updated annually.

Connecticut has a multidisciplinary healthcare associated infections committee that advises DPH on HAI surveillance and prevention activities and policy, in particular, what HAIs and locations should be made publicly reportable. Under the law that authorizes public reporting of HAIs and funds the DPH HAI program, DPH must follow the group's recommendations.

There are two large HAI prevention collaboratives in the state: the Connecticut Hospital Association (CHA)-led Johns Hopkins CUSP: Stop BSI project and the Multi-drug resistant organism (MDRO) project led by Qualidigm, the state's Quality Improvement Organization (QIO), under the Center for Medicaid and Medicare Services (CMS) 9th Scope of Work. The DPH HAI program and the Network of New England (the regional association of dialysis centers) are participating in the conference calls that are a component of the Centers for Disease Control and Prevention (CDC)-Maryland Health Department-Delmarva Foundation collaborative on prevention of HAIs in hemodialysis centers.

Connecticut, as an Emerging Infections Program (EIP) site, is actively involved in Methicillin Resistant Staphyloccus Aureus (MRSA) surveillance through the Active Bacterial Core Surveillance (ABCs) program and was a co-author in the landmark EIP study on community-associated MRSA in the Journal of the American Medical Association in 2007.

In addition, the Epidemic Intelligence Service (EIS) officer at DPH has recently completed a validation study of Vancomycin Resistant Enterococcus (VRE) data reported from ICUs in Connecticut hospitals. She lead a team of master's level nursing students in a chart audit involving all 30 of the hospitals in the state to determine the cause of a recent increase in VRE reports. This study indicates that the increase was a real finding and not a reporting artifact.

Necessity of creating, expanding, and sustaining an HAI surveillance and prevention program in Connecticut

While Connecticut has capacity and activities in HAI prevention and public reporting, there is a significant need for the state to enhance and expand our work in this area. Currently we area only tracking one measure using NSHN (CLABSIs) and there is interest in the state, and at the federal government, in having us expand to additional measures, including process measures, such as central line insertion practices and outcome measures such as MDROs and *C. difficile,* or, in time, other locations, including non-hospital facilities.

A CLABSI validation study has been completed on the data from the 4th quarter of 2008, involving blinded chart audits on all patients with a positive blood culture (determined from microbiology reports) in all reporting ICUs in the state. Over 400 charts were reviewed. The study determined that during the study period, DPH identified 49 CLABSIs from the reporting ICUs, while the hospitals reported 23 CLABSIs (47%) of cases. Four cases were reported as CLABSIs by the hospitals that were not classified as CLABSIs by the validation. Various misunderstandings about NHSN surveillance or term definitions were identified as the major cause of the underreporting, especially the difference between clinical and surveillance definition of reporting "events" such as CLABSIs. The recommendation is for additional training of infection prevention personnel in the hospitals about, and based on, the findings of the study. These trainings will be held this summer, and the data will be revalidated after the training is completed in the 4th quarter of 2009

Over the past year, Connecticut DPH staff has been regular participants on monthly CDC Division of Health Quality Promotion (DHQP)-led NHSN state conference calls, and on the Council of State and Territorial Epidemiologists (CSTE) HAI committee that also has monthly calls. This will continue. In addition, DPH has been regularly using and posting materials in the state user section of the NHSN Web board. This will also continue, and will include the posting of the validation study protocol and results, and the 2009 Annual report by November 1, 2009, and the state HAI plan by January 1,2010.

Accomplishments and Proven Capacity

Current HAI surveillance and prevention capacity in Connecticut

As noted above, the legislature also allocated state funding of $275,000 annually, sufficient to establish and permanently maintain a three-person state HAI program at DPH. These funds are now a permanent line item in the state budget. Connecticut has the capacity to plan for HAI surveillance and prevention. The DPH program coordinator, a physician with over 20 years of public health experience in HIV prevention, Family Health (Children with Special Healthcare Needs, genetics) and public health preparedness (smallpox and mass dispensing coordinator), leads the Connecticut HAI planning effort and directly supervises the DPH HAI prevention staff. The program has two other staff persons, both epidemiologists. One is also a nurse with two decades of experience in clinical care in hospitals and long-term care facilities. She is an infection control practitioner and microbiologist. The other is an MPH with expertise in NHSN data management, relevant software packages (SAS, Epi Info, ACCESS), and biostatistics. The Connecticut HAI program is housed in the Infectious Disease Section, under the leadership of

Dr. Matthew Cartter, the state epidemiologist, who is also the Principal Investigator of the Connecticut Emerging Infections Program.

Experience with formal agreements with firms or healthcare facility staff with HAI prevention or surveillance expertise

There are no formal agreements between DPH and HAI prevention firms. Connecticut does not have a state Association for Professionals in Infection Control chapter, but Infection Preventionists in the state are members of the New England Chapter of APIC. DPH does have significant relationships and a long history of formal agreements, including contracts, with CHA and Qualidigm, the organizations leading the state HAI prevention collaboratives. For example, CHA's CHIME initiative collects and stores hospital utilization data, and DPH has access to this data via a formal agreement. In addition, these prevention partners are members of our state advisory committee, the HAI Committee.

Past experience of ability to evaluate HAI related issues in non-acute care settings

In the late 1990s the DPH ID Section investigated and served as public information subject matter experts when it was discovered a physician (who was a part-time local heath director) did not change syringes between patients during large-scale influenza vaccine clinics.

The Connecticut DPH Infectious Disease Section has been involved in MRSA outbreak investigations, most notably a large outbreak in an athletic team in 2005, investigated by the Connecticut EIS officer at the time. In 2008-9, DPH has also advised our Department of Corrections on surveillance methods to characterize and track MRSA in their facilities and designed a training curriculum and trained Correctional and Correctional health trainers on MRSA.

Ability to quickly initiate the proposed activities

Connecticut state government is aggressively managing American Recovery and Reinvestment Act (ARRA) funds. The Governor has established a cabinet-level task force that meets biweekly to ensure that funds are rapidly allocated and disbursed and that all federal requirements for accountability and transparency and other guidelines are met. This includes expedited hiring and recruitment. The work plan of this application has been designed to increase the speed of allocation. Connecticut DPH will be flagging the personnel action forms and other required paperwork and approvals, and through ARRA, we will be able to avoid the state hiring freeze and be allowed expedited processing. Contractual funds are minimal in this application; the focus is on workforce development and capacity building of sustainable infrastructure of professionals, rather than use of contractors. For those funds that will be contracted to our prevention collaborative leader agencies, the state budget office will permit expediting funds though a special accounting tracking code in our state administrative MIS. Because the coordinator of this project will be a lateral transfer, the position can be filled immediately and work will begin as soon as DPH receives notice we have received funding.

Project Work Plan

Evaluating MRSA HAIs in non-hospital settings

Objective 1a: By August 30, 2010, develop an EIP network project plan and protocol for evaluating MRSA HAI in non-hospital settings.

The DPH HAI EIP staff will participate on at least 90% of EIP/ABCs MRSA Pathogen committee network calls related to this activity and participate in developing the written protocol by sharing source materials with CDC, answering requests for background information, reviewing and making comments on drafts, and soliciting comments from healthcare facilities (acute care for discharged patients and long term care facilities) and subject matter experts. If Institutional Review Board approval or other approvals are required, the DPH staff will ensure that Connecticut approvals (from DPH or participating facilities) are obtained.

Objective 1b: By December 20, 2011, complete site participation duties for the evaluation of MRSA HAI in non-hospital settings.

In accordance with the protocol developed by the EIP Network, including sampling scheme and methodology, DPH HAI EIP staff will complete all data collection from long term care facility residents through medical record review and other methods if required by the protocol, and will submit de-identified data to CDC for multi-site analysis in accordance the protocol. Staff will also review and make comments on any reports, other documents, or data prepared by CDC for this project.

Innovations in surveillance though the NHSN

Objective 2a: By August 30, 2010, the DPH EIP will establish and enroll at least 10 hospitals in the DPH EIP NHSN group.

After the EIP HAI staff is hired, they will be trained on NHSN by the DPH HAI program staff, using the trainings on the NHSN website and with coaching and use of Connecticut-specific supplementary NHSN training materials. The NHSN training will include the protocols on establishing a group. After this training, the HAI EIP coordinator will acquire permission from CDC to become a group administrator, and establish a group, and all hospitals in the state will be invited to join the group, with special emphasis on those hospitals participating in the state QIO's 9th Scope of Work MDRO prevention collaborative (it is expected that there will be 10 of these by August 30, 2010).

Objective 2b: By August 30, 2010, report to the state MDRO prevention collaborative and the state HAI committee on MDRO data and any enhanced analysis on data collected by the EIP though the EIP group.

The DPH EIP HAI staff will participate in any EIP network workgroup working on NSHN data collection and analysis using the MDRO and *C. difficile* infection (CDI) modules or other projects related to supporting and evaluating state MDRO collaboratives. In conjunction with

the DPH staff working closely with the state MDRO collaborative, the EIP HAI staff will meet and introduce their project to the collaborative and to the state HAI committee to garner support and to solicit requests for data analysis and reporting.

Hospital-wide HAI prevalence survey

Objective 3: By December 30, 2011 three hospitals in the state will participate in the full-point one-month EIP Network HAI prevalence survey.

DPH EIP HAI staff will participate in protocol development with the EIP network, and will actively recruit three hospitals (likely one large urban, one medium sized, and a small rural hospital) to participate. The Network will be devising a scheme to ensure a representative sample of hospitals. We assume that in Connecticut this may be one large, one medium, and one small hospital. The DPH staff will facilitate training of the participating hospitals, and can use DPH training infrastructure for that purpose if necessary (we have access to training rooms, a computer lab, WebEx, and the distance learning capabilities of TRAINConnecticut). DPH HAI staff can assist with this training. DPH EIP HAI staff will assist the participating facilities receiving approvals and reviews (such as IRB), and can help facility staff promote the project to facility leaders such as Chief Executive and Medical Officers to garner their support.

Interruption of inter-facility transfer of MDROs and CDI

Objective 4: By August 30, 2011, complete an assessment of the role and potential for interruption of inter-facility transfer of MDROs and CDI between healthcare facilities, in particular between hospitals and long term care facilities.

DPH is aware that patients are often transferred between acute care hospitals and long term care facilities. Anecdotal information from hospital prevention staff is consistent with findings in the literature that there is a high prevalence of MDROs in the long-term care patients being admitted to hospitals. Of particular interest is the existence of more or less formal networks between long term care facilities (LTCs) and the hospital to which they admit, which suggests some potential strategies for coordinated action by prevention collaboratives, and the benefit of more detailed epidemiological information to guide the collaboratives as they seek to interrupt MDRO spread in these networks. DPH EIP HAI staff will participate in the EIP Network on protocol development and will participate in coordinating the activities with the state MDRO prevention collaboratives, seeking support for the project, and will share the findings with the collaborative.

Improve NHSN reporting and operations

Objective 5: By December 30, 2011, complete an evaluation and make recommendation on a ways to improve NHSN functions for users, especially healthcare facilities.

This project will be developed in conjunction with the EIP Network and DHQP staff. It will involve determining study parameters and methods, and will likely involve state-level participation in surveying NHSN users for an assessment of their experience, and key

information or focus group activities to brainstorm streamlined ways to validate data and to address barriers to the increased use of NHSN to store, retrieve, and use data at the facility and state levels. Validation of data is of particular interest, as we have used the "gold standard" of auditing the charts all possible cases for the study period and are well aware that it is difficult, time-consuming, and difficult to repeat.

Staffing

The staff involved in this project includes the following:

New staff

1. The Epidemiologist 3 will be responsible for the implementing the work plan and evaluating the EIP HAI activities supported by this cooperative agreement supplement. The Epidemiologist 3 and the Connecticut Career Trainee funded under this supplement will receive extensive initial and ongoing training in HAIs. They will also be invited to attend the trainings of hospital infection preventionists that DPH will be holding this summer to become familiar with the NHSN and the hospital infection prevention staff. DPH will arrange for the staff to become trained in HAIs in general though access to an APIC training in the region, preferentially, in the state. In addition DPH HAI program is making a basic training on infection control available for infection prevention staff that can travel to an APIC training, and the EIP HAI staff will be encouraged to attend. Finally, staff will be encouraged to take relevant online courses via the CDC DHQP website, CDC clinician distance learning (COCA) trainings, and through TRAINConnecticut, the extensive Public Health Foundation-sponsored learning management system used by DPH.

2. Vacant (Connecticut Career Trainee) – this will be ½ FTE of a full-time position that will be a new hire for a newly established job. This individual will be responsible for the extensive required federal ARRA and state of Connecticut administrative, program, and fiscal reporting activities. The individual will be supervised by the Epidemiologist 3 and will also be extensively trained in HAIs, preparing that individual to have the contextual information that will be highly beneficial in participating on the logistical aspects of the projects; but also, as a way of preparing the individual for a future job in the field of healthcare administration from the patient safety and infection prevention perspective. The individual will also be mentored by Diana Eaton and the staff of the DPH Business Office in state administrative and accounting practices, and will be encouraged to take state employee training in grants administration, contracts, and fiscal and program management to build skills that will be useful in this project

Current staff

1. Matthew Cartter, MD, MPH PI for the Connecticut EIP site, and Connecticut State Epidemiologist. It is expected that Dr. Cartter will b appointed as the DPH Infectious

Disease Section Chief, but this appointment has been put on hold due to a freeze in state hirings and promotions.

2. Richard Melchreit, MD, HAI Program Coordinator. The HAI program is in the ID Section and he will report to Dr. Cartter when the ID Section Chief position is filled. In the meantime, he directly reports to Lisa Davis, RN Public Health Intervention Program Branch (Bureau) Management Team Leader. Dr. Melchreit is a pediatrician with 22 years of experience in the state public health department. He has worked in HIV prevention, Family Health (CSHCN, genetics) and public health preparedness (smallpox and mass dispensing coordinator), leads the Connecticut HAI planning effort, and directly supervises the DPH HAI prevention staff.

3. Lauren Backman, RN, MHS Epidemiologist 3, Healthcare Associated Infections Program. Ms. Backman is experienced in infection control; she has been a hospital infection control coordinator, microbiologist, clinical-service nurse in Connecticut hospitals, and an epidemiologist in the state health department. At DPH she has worked in HIV/AIDS prevention and with community health centers. She will collaborate with infection control practitioners, hospital epidemiologists, and staff on the interpretation of Connecticut NHSN data and on interventions.

4. Richard Rodriguez, MPH Epidemiologist 2, Healthcare Associated Infections Program. Mr. Rodriguez is the person primarily responsible for reviewing the NHSN data, preparing it for analysis, analyzing the data, and preparing reports for the HAIP program, HAI prevention partners, and the public. He is the primary contact for the facilities reporting data through NHSN to DPH and assists them in collaboration with CDC, on technical aspects related to data entry and use of NHSN. He also offers training and technical assistant to the health facility staff on proper NHSN data entry and on data analysis and interpretation.

5. Diana Eaton, Health Program Associate, Infectious Disease Section. Ms. Eaton coordinated the reviews and approvals and other state business processes for the EIP and the ELC cooperative agreements between CDC and DPH. She tracks expenditures and deliverables for the programs, ensuring that the deliverables and reports meet CDC requirements and are timely. She also develops contracts and other formal agreements between DPH and subcontractors for the EIP and ELC cooperative agreement projects.

6. Susan Petit, MPH, Active Bacterial Core Surveillance Project Coordinator, Infectious Disease Section. Ms. Petit manages the Connecticut ABCs project, which includes MRSA surveillance, and collaborates with the Connecticut HAI program on certain MDRO activities, such MRSA and other MDRO-related information and training projects; she is a resource to the HAI program on MRSA data.

Reports

1. Connecticut Healthcare Associated Infection Annual report

In accordance with state law, the DPH HAI program submits an annual report to the state legislature that details data required under the state mandatory HAI reporting law. There are three audiences for this report: state legislators (in particular the Public health Committee), the media, and the general public. The law specifies that the report should be for the legislature and the public, and this report is posted on the state website as required under the law. The report has an executive summary, background information on HAIs and the program, and tables of reported data that have been submitted to DPH via NHSN with analysis and interpretation by DPH HAI program staff.

2. Connecticut HAI website

The aim of the website is to be an educational resource for the general public and for health professionals. The format, complexity of material, and reading level is targeted in different sections of the website for these two audiences. The website is also a location where interested person may access updated information on the deliberations and recommendations of the state HAI Committee, including reports on data in HAI Committee meeting minutes, and where they can get easy access to other authoritative resources, such as CDC's DHQP.

3. NHSN State of Connecticut HAIP folder

The Connecticut HAI program is committed to posting technical assistance materials and reports, including worthwhile documents developed in the course of business, such as the protocol and the upcoming reports from the recently completed data validation study on the website to make them accessible and useful for our colleagues in the other state HAI programs.

Web-based Tools

We do not anticipate developing any web-based tools specifically for this EIP site.

Avoiding federal funding duplication

The greatest danger of duplication would be to have the EIP project operate separately from the MDRO prevention collaborative that Qualidigm, our QIO, is managing for the CMS 9th Scope of Work. This will be avoided because DPH is developing an actively collaborative relationship with Qualidigm and is hiring ARRA staff under the ELC cooperative agreement supplement that will ensure we have DPH staff at all collaborative planning activities. By participating actively throughout the planning, implementing, and evaluation cycles of the collaborative, we will ensure the EIP activities will be complementary and responsive to the needs of the collaborative for enhanced surveillance data to improve, and not duplicate, the data gathering and collaborative's evaluation activities.

Performance Measures and Evaluation Plan

The EIP HAI staff will be responsible for preparing the reports and for ensuring they are submitted to CDC by the 10th day after the end of the reporting quarter. These quarterly reports will be reviewed with senior HAI program and Infection Disease Section staff, and will be used as a management tool for supervision of EIP HAI staff.

1. ARRA reporting
    a. Fiscal data on expenditures (which are mostly for DPH personnel) are generated by the State Comptroller and will be accessed from CoreCT, the state MIS
    b. Estimate of number of jobs created or retained – for this project it will be simple to count, and can be documented via CoreCT.
    c. Fiscal data on expenditures for travel and supplies are also generated by Core CT and can be accessed by DPH staff directly, and if necessary, with assistance from the DPH Business Office staff
    d. Program reports on activities – staff will be asked to maintain a transcript of training on TRAINConnecticut, the DPH learning management system. TRAINConnecticut can retain training records both on trainings accessed through TRAIN and on trainings not accessed through TRAIN.
    e. Documentation of program outputs – these will be accessible and archived by posting them on the DPH HAI website, the CDC webboard.
    f. Logs kept by HAI EIP staff will maintain documentation of program staff collaborative activity – records of meetings and participation in EIP Network meetings.
    g. Sub-awards – there will be no subcontractors

2. Performance Measures
    a. Number of research questions addressed – review of meeting minutes, reports
    b. Staff HAI expertise – review of training records
    c. NHSN communication – number of hospitals enrolled in NHSN in the DPH HAI EIP group (accessible via NHSN)
    d. NSHN data submission – monthly plans and monthly review of submitted data by members of the EIP's NHSN group (accessible via NHSN)
    e. Hospital wide prevalence survey – review of protocol and data submitted by the participating hospitals to DPH and CDC

Budget Justification

The State of Connecticut Department of Public Health (DPH) is requesting funds to support the Emerging Infections Program (EIP) cooperative agreement Healthcare Associated Infections Program. DPH is requesting **$480,602** to support the Connecticut HAI EIP activities throughout the budget period (August 30, 2009- December 29, 2011)

Personnel Total $239,667

1. **Vacant ,** Epidemiologist 3 (100% effort for 28 months)($179,667)
   This position will plan and implement the HAI activities in the EIP program in Connecticut. This will involve participating in EIP networking and protocol development in collaboration with CDC and the other participating EIP sites, collaborating with other DPH HAI program and healthcare facility staff that are using NHSN for public reporting to expand NHSN in accordance with the state HAI plan and to facilitate NHSN use by the EIP, evaluating NHSN reporting and operations, coordinating the HAI seroprevalence survey in the state, and MDROs and CDIs in

2. **Vacant**, Connecticut Careers Trainee, (50% effort for 28 months)($60,000)
   This durational project manager position will prepare ARRA program and fiscal reports, gather data, write, participate in ARRA planning and reporting meetings; organize regular communications including conference calls, Webinars and meetings with facilities and healthcare providers in the state to foster their participation in the EIP HAI protocols; and assist in performance measure data gathering and reporting.

Fringe Benefits Total $135,915

The estimated fringe benefit rate or state fiscal year 2009 for DPH is 56.71%. This rate is applied to the personnel salary base for the position above. The fringe benefit rate may change in future state fiscal years.

Travel Total $12,960

1. In-state Travel ($6,160)
   Funds are required to support the cost of in-state travel to meetings using a state-vendor rental car or for mileage reimbursement for use of a personal car ($0.55/mi x 200 mi/month x 28 months x 2 staff)

2. Out-of-state Travel ($6,800)
   Two national meetings each year x 2 staff: this will support both the EIP HAI PI and the Epidemiologist 3's attendance at one required national EIP meeting each year to work with

CDC and other participating EIPs on development and coordination of national research and surveillance protocols.

Item	Cost per	Persons	Days	Subtotal
Hotel	$150	1	3	$450
Airfare (round trip)	$950	1		$950
Other (meals, per diem)	$100	1	3	$300
TOTAL				$1,700

Training support Total $2,300

1. In-state conferences/trainings ($1,050)
   This is for registration fees for the DPH EIP HAI staff to attend in-state conferences/meeting/trainings (2 FTE x 3 conferences x $50/conference) and to rent space for display booths at them to enhance networking with participants (250 x 3 conferences).

2. Training development and delivery ($1,250)
   These funds will support four trainings (4 trainings @ $250) that the EIP HAI staff will deliver to healthcare providers and public health staff on EIP HAI surveillance protocols and surveillance data. The funds will be used for facility rental, preparation of materials, publicity and miscellaneous s associated costs. It will also be used to support online or blended learning costs associated with course development and posting on the DPH learning management system (TRAINConnecticut).

Supplies $3,000

1. Office supplies ($2,000)
   Connecticut is committee to reducing the use of office paper, but some paper supplies are needed for preparation of reports and planning documents; computer supplies will be needed, include compact disks; and printing costs include copying costs for printouts of documents, and mailings. Other supplies will also be needed, including files, organizers, staples, a hand calculators etc.

2. Desktop computer ($1,000)
   These funds will support the purchase of one PC for the EIP HAI and associated software, to enable the staff to complete required data management and analysis for the project. A second PC will be obtained from available state inventory.

Indirect Costs Total $86,760

The indirect cost rate for DPH for SFY 2009 is 36.2%. Indirect costs are based on the salary total.