

INFECTION CONTROL TRAINING CENTERS
ASSESSMENT of TRAINING IMPACT on
HOSPITAL INFECTION CONTROL PRACTICES

REPORT for ST. PETERSBURG, RUSSIA



AMERICAN INTERNATIONAL HEALTH ALLIANCE

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I. Executive Summary

The American International Health Alliance's (AIHA's) Infection Control Program was initiated to address the spread of hospital infections in Eurasian countries. The first center, established in 1997 in St. Petersburg at the St. Petersburg Medical Academy in the name of I.I. Mechnikov, is a state-of-the-art training center licensed by the Russian Ministries of Health and Education. The St. Petersburg center served as the model for the other three centers (established in Kiev, Almaty, and Tbilisi) and personnel from the St. Petersburg ICTC conducted much of the training and initial assessments for the other ICTCs. The ICTC develops and implements standardized protocols for conducting active hospital surveillance and effective infection prevention practices and disseminates infection control reform policies and procedures. As the faculty increased its expertise and demonstrated results through changes in practices and scientific studies, the Russian Ministry of Health involved the ICTC in a consultative role for the northwest region and on national policy reform.

In order to assess the effectiveness of the program, AIHA conducted a telephone survey of sixteen hospitals, representing a sample of the 33 hospitals in the St Petersburg area. The institutions ranged in size from 50 to 1,800 beds (average 716 beds), with 2,000 to 35,919 admissions per year (average 18,163 admissions).

Almost all institutions had administrative and personnel support for infection control programs, with a committee structure and the input of senior clinical personnel. Most Hospital Epidemiologists were trained and had responsibility for generating institutional infection control guidelines and protocols. But, the institutions had not accepted the role of an infection control practitioner or other nurse as an integral and active part of the process.

Surveillance was accepted as a concept, but the implementation had shortcomings with respect to definitions, standard numerator and denominator counts, rates, and active surveillance. Outdated practices, such as passive reporting by physicians, environmental sampling, and even staff sanctions in one hospital, continued. Only three-fourths of the hospitals were able to provide credible institutional or surgical data. Microbial resistance to antibiotics was widely accepted as a problem and testing was reportedly conducted, but routine summary laboratory data were not available to support this finding.

"Universal precautions" were recognized and accepted by the majority of institutions, but glove use and needle reprocessing remained inconsistent in some institutions. Six of the 15 institutions recorded cases of hepatitis B and C among healthcare workers in the past year. Infection control guidelines and protocols were routinely available, but formal internal training appears to be limited. The city and university support infection control through training and consultation.

A foundation for infection control programs was established under the leadership of the city and university coordinators and staff. Procedural institutional and nursing guidelines and protocols for infection control were established and used in training, as recommended. Surveillance data were available, but need to be improved through precise definitions, active numerator data collection, matching with appropriate denominators, and comparative rate reporting. The relationship between infection control processes and outcomes of decreased Nosocomial Infections has yet to be established in most of the sampled institutions.

II. Introduction

The prevention and control of hospital-acquired infections (nosocomial infections) and other infectious diseases is a significant problem in Eurasian countries due to years of scientific isolation and the absence of evidence-based approaches to medicine and public health. To expand training capacity in infection control, clinical epidemiology, and evidence-based practices and to reduce patient mortality and morbidity due to infections, AIHA developed a Region-wide Cross-partnership Infection Control program. The foundation of the program was the ICTC in St. Petersburg, Russia, established by AIHA in collaboration with US partner expert institutions – Harvard Medical International (HMI) in collaboration with Hospital Infection Prevention and Quality Assessment (INQUAL), the New England Chapter of the Association of Professionals in Infection Control and Epidemiology (APIC), and the Society of Healthcare Epidemiology of America, Inc. (SHEA). The St. Petersburg center was established in 1997 and three additional ICTCs were established by AIHA in 2001 as part of the cross-partnership program.

The ICTCs provide theoretical and practical evidence-based courses to practicing epidemiologists, physicians, and nurses. Clinical practice guidelines based on internationally recognized infection control principles and practices and instructional materials, such as the 2nd Edition Basic Infection Control Manual created by the St. Petersburg and HMI partners and produced by AIHA, are provided. AIHA supplied each center with three to five computers and manuals. AIHA supported Internet connectivity for the Centers in order to foster a supportive community of epidemiologists and physicians connected to professional counterparts worldwide.

Over the years, AIHA has provided ongoing support to the four ICTCs, largely through training workshops, supply of manuals, and Internet connectivity. The St. Petersburg Center is self-sustaining and with the graduation of the partnership in 2003, AIHA does not anticipate supporting the Center after 2004 except for consultative services and HIV/AIDS guidelines development on a contract basis.

III. Objectives

The purpose of this survey was to determine the percentage of hospitals from a pre-selected sample targeted by the AIHA Infection Control Program that demonstrated improved infection control practices among clinical staff and to determine the percentage of hospitals from a pre-selected sample that demonstrate an active infection control program. The survey was designed to assist AIHA in determining the overall success of the Region-wide Cross-partnership Infection Control Program.

IV. Methodology

The survey was conducted using a standardized survey instrument (see Attachment I), designed and developed by AIHA's monitoring and evaluation staff with the expert consultation of Dr. Hierholzer (the former Chair of the American Hospital Association's Technical Panel on Infections within Hospitals, a Past President of SHEA, the former Chair of HICPAC, and a member of the JCAHO Infection Control Indicator and Information Management taskforce). Roman Yorick, Senior Program Coordinator and M&E Coordinator, AIHA/Moscow, conducted the telephone interviews.

The survey instrument was designed to match categories in AIHA's Infection Control Results Framework. The instrument was pilot tested in Russia, Georgia, Ukraine and Kazakhstan to ensure that questions were appropriate was revised slightly based on pilot tests.

The telephone survey was conducted with representative infection control participants from sixteen area hospitals (Attachment II). The demographic and infection control related characteristics of the individual hospitals, the infection control programs, and pertinent infection control concerns in the institutions were the focus of the survey. The surveyed institutions represented a sample of the 33 medical institutions in the St Petersburg area and ranged in size from 50 to 1,800 beds (average 716 beds) with 2,000 to 35,919 admissions per year (average 18,163 admissions). Twelve hospitals performed surgical operations, and in the nine hospitals reporting surgical data, 357 to 19,048 surgeries were performed in the previous year (average 6,771). Although the St. Petersburg ICTC conducted training throughout the northwest region of Russia, only institutions from St. Petersburg were included in this survey due to limited funding.

The representative of one institution refused to respond to the questionnaire, indicating that, "The administration of this institution felt that this internal information could not be shared with outside sources." This institution was removed from the tabulation of results and the analysis in this report is of the 15 remaining institutions. Eleven (11) of the 15 interviewees reported having previously completed an ICTC course in infection control.

V. FINDINGS

Infection Control Committee Organization and Function

All fifteen institutions reported the presence of an Infection Control Committee. The Committee was usually chaired by a senior physician or surgeon (13/15) and the members included the Hospital Epidemiologist (12/15). In the majority of cases, the committee also included senior physicians, surgeons, nurses, microbiologists, pharmacists, and department chairmen. The Committees met monthly or quarterly in most hospitals (11/15), but more frequently in two and less frequently in one (every six months). Nosocomial infections were counted and reported by either the Hospital Epidemiologist (9/15) or individual physicians or both (7/15). In only one instance, an infection control practitioner reported to the committee. In 12 of the 15 institutions, the reporting staff person was considered to be trained in infection control.

Almost all institutions have administrative and personnel support for infection control programs, but they do not appear to have accepted the role of an infection control practitioner or other nurse as an integral and active part of the process. In addition, there appear to be vocal and significant outliers in accepting some goals of these infection control programs and, especially, in accepting the use of standard epidemiological methods.

Surveillance Methods, Reports and Data

Thirteen of the 15 respondents reported that Nosocomial Infections were considered an important problem in their hospital. Surveillance for Nosocomial Infections occurred in all 15 hospitals and for surgical wound infections in 10 of the 12 hospitals performing surgery. The definitions used for recording infections appeared appropriate for timing, content, and source in 10 of the 13 institutions, but are questionable in three. In addition, two responders were unable to provide any information on these definitions. Eleven hospitals reported surveying continuously and 2 hospitals reported surveying once every 6 months for Nosocomial Infections.

The most frequently used survey method was passive reporting by individual physicians (7/15), closely followed by patient microbiology report monitoring (6/15). Active incidence density surveillance, the standard method, was used at only five hospitals. Environmental culture monitoring (4/15) and monitoring with staff sanctions (1/15) continue to be reported by some institutions.

Little useful information was offered in response to the request for recent surveillance data from these institutions. Meaningful numerators (number of infections) and denominators (patient population) were given by two respondents. Numerators without denominators were reported in three cases, and, of greater concern, “a zero infection rate” was reported in three cases. In the 10 hospitals reporting surveillance of surgical wounds, infection rate data were available in six. Of these six, four provided actual numerator and denominator counts, but only three of these appear to be within credible boundaries.

Surveillance appears to be accepted as a concept, but the methodology as currently implemented does not routinely use appropriate definitions, standard numerator and denominator counts, rates, and active surveillance as accepted, taught, and implemented in evidence-based programs. The common use of passive reporting by physicians, continued environmental sampling in several institutions, and even staff sanctions in one hospital are problematic and indicate continuing support for antiquated methods over current, modern concepts. These problems were confirmed by only three-fourths of institutions providing either institutional or surgical data that is credible.

Surveillance of Antibiotic use and Antibiotic Resistance

Eleven of the 15 hospitals recognized antibiotic resistance as a problem in their institutions. Three reported that antibiotic resistance was not a problem and one other did not respond to this question. Patient bacterial specimens were reported as consistently tested for resistance to antibiotics in 12 of the 15 institutions, and the most frequently reported resistant organisms were *staphylococcus aureus* (6) and *pseudomonas aeruginosa* (5). In the 12 hospitals performing surgery, surgical antibiotic prophylaxis was used in 11 and a cephalosporin is the most common antibiotic group used (5/11). Microbial resistance to antibiotics was widely accepted as a problem and related testing was being conducted, but routine summary laboratory data were not available to support this finding.

Universal Precautions (Standard Practice)

“Universal precautions” were recognized and related procedure(s) were reported as accomplished in 14 of the 15 hospitals surveyed. Compliance with these procedures was monitored and enforced by infection control standards in four hospitals, and through administrative standards in six hospitals. Intravascular needles were reused in only five of the 15 institutions; in four institutions the needles were reprocessed by autoclaving between patient uses. One institution reported the continuing use of dry heat for reprocessing of needles. All hospitals performing surgery reported glove use by all members of the surgical team during operative procedures and during routine cleanup thereafter. However, only nine institutions reported using gloves during surgical instrument cleaning and processing. Six of the 15 institutions recorded cases of hepatitis (B or C) during the past year. Two were recorded in employees on hire, one was reported as latent, and three were reported as chronic, making source attribution of these cases difficult.

Universal precautions were recognized and accepted by the majority of these institutions. However, unacceptable variations in glove use and needle reprocessing remained in some institutions. The evidence on the continued appearance of hepatitis B and C in these healthcare populations needs to be more carefully reviewed in future studies to assure that prevention of blood borne transmissions is minimized.

Information on Nursing Practices Related to Infection Control

Twelve of the 15 hospitals reported infection control guidelines or protocols as part of current nursing practices. The Hospital Epidemiologist or infection control practitioner was reported as responsible for the preparation, updating, and review of these protocols in eight of the 12 hospitals reporting their use. All nurses in 10 of the institutions received training in these protocols, with training varying from monthly (2) to yearly (4) in institutions reporting frequency of training.

Quality Improvement for Infection Control

Eleven of the 15 institutions had formal, written infection control protocols in place. In five hospitals, the Hospital Epidemiologist or the Infection Control Committee developed and implemented the protocols. In four others, the Hospital Epidemiologist, in collaboration with another senior administrator, was responsible for the protocols. The most frequently used resources for information on appropriate infection control protocols were the City of St. Petersburg (7) and the local university (5). Other frequently used sources were the Ministry of Health (3), the Internet (3), and books and journals (3). Infection control guidelines and protocols (such as the 2nd Edition AIHA Basic Infection Control Manual) were routinely available and likely used in these hospitals, but formal internal training appears to be more limited. A strong local group for infection control training and consultation in the city and at the university was functioning and serving the hospitals.

VI. Conclusions

A solid foundation for the administrative and personnel structure for infection control programs was established in these institutions under the leadership of the city and university coordinators and staff. Procedural institutional and nursing guidelines and protocols for infection control practice were established and being reviewed and used in training, as recommended.

Surveillance had begun in most institutions and some data were reported. But, precise definitions, active numerator data collection, matching with appropriate denominators, and comparative rate reporting was lacking. This prevented the documentation of the relationship between infection control processes and outcomes of decreased Nosocomial Infections in most of these institutions.

Antimicrobial resistance was reported as an important concern and concomitant laboratory testing was reported to be common. But, as with surveillance, this practice was not confirmed by routine standard reports of credible information.

Continued future support for these programs should reinforce the administrative and personnel requirements for infection control programs in these and all medical care institutions. A new effort is recommended to identify, accept, and use standard epidemiologic and laboratory methods for guiding and documenting improved outcomes in infection control.

Attachment I: Questionnaire

Survey of Hospital Trainees in Infection Control

Date of Interview:
Name of Respondent:
Title:
Name of Institution:
When did you complete an AIHA course on Infection Control? Yr. _____ Month _____ Did not complete course _____

General Information

1. What is your Hospital's current census? _____ How many admissions to your hospital have there been in the past year? _____ Does your Hospital have a surgical service? (Yes/No) If yes, how many surgeries (procedures) were done in the past year? _____

2. Does your Hospital have an Infection Control Committee? (Yes/No) How frequently does it meet? _____ Who is the Chairman of the Committee? (Position) _____ What are the positions of the other members of the committee?

3. Please provide the case definition of nosocomial infections utilized by your institution.

4. Are Hospital Infections an important problem in your hospital at the current time? Yes _____ No _____ Don't know _____

(Results Framework Objective 1: Improved surveillance and assessment capacity in the areas of nosocomial infections and a/b resistant microorganisms.)

Improved Surveillance (nosocomial infections)

5 Have you surveyed for Hospital Infections in the past year? (Yes/No) If yes, how frequently were these surveys conducted? _____

6. What method(s) did you use for surveillance? Please provide specific details.
[Note to interviewer: The type of responses we are looking for include: Active surveillance (concurrent, prospective or retrospective); Prevalence studies; and/or Passive surveillance]

7. Did you survey for Surgical Wound Infections in the past year? (Yes/No) If yes, what was your rate for those surgeries surveyed ___% (Please provide the raw numerator and denominator if possible i.e. 3 infections in 136 surgeries done and surveyed.) ___/_____

8. Do you use antibiotic prophylaxis in surgery? (Yes/No) If yes, please list the antibiotics that are used for each surgical procedure.

9. How many Hospital (nosocomial) infections were identified in your hospital in the most recent month surveyed? _____ How many patients were surveyed? _____

10. Who identifies, counts and reports Hospital Infections to your Committee in your hospital? (Position?) _____ Has this individual attended a course on Infection Control? (Yes/No)

Improved Surveillance (antibiotic resistance)

11. Is antibacterial resistance an important problem in your Hospital? (Yes/No)

12. How often does your hospital microbiology laboratory test for antimicrobial resistance in bacteria causing infections in your hospital? _____

13. What is the most prevalent resistant bacteria detected in your hospital? _____

Universal Precautions: General

14. Does your Hospital practice Universal (Standard) Precautions for blood-borne diseases?
Yes____ No____ Don't know ____ Not familiar with term ____

If Yes: Does your hospital practice universal precautions: All of the time ____ Part of the time ____ Rarely____?

If No, please explain why not : _____

[Note to interviewer: potential responses include: (1) because they are not told to do so; (2) because they are not properly supervised to do so; (3) because they do not believe that it is important to do so; or (4) because they do not have adequate equipment and supplies to do so.]

15. How does your hospital enforce practice of universal precautions? _____

16. Are injection and/or intravenous needles reused at your hospital? (Yes/No)

If Yes: Does your hospital reuse injection and/or intravenous needles: All of the time ____ Part of the time ____ Rarely____

How are they disinfected? _____
[Note to interviewer: potential responses include: boiled, steam/heat sterilized, use of liquid/chemical]

Universal Precautions: Surgical

17. Do **all** individuals **performing or assisting** in all major and minor surgical procedures wear gloves during the **entire** procedure? (Yes/No)

If **Yes**: Do they wear gloves during surgical procedures: Always____ Sometimes ____ Rarely____?

18. Do **all** individuals **performing or assisting** in all major and minor surgical procedures wear gloves during cleanup of instruments and Operating Room surfaces after the cases? (Yes/No)

If **Yes**: Do they wear gloves during cleanup: Always____ Sometimes ____ Rarely____?

19. Do **all individuals conducting surgical instrument cleaning and sterilization** after surgical cases wear gloves during this process? (Yes/No)

If **Yes**: Do they wear gloves during cleaning and sterilization of the surgical instruments: Always____ Sometimes ____ Rarely____?

20. Have any of the surgical (surgeons, physicians), nursing, support staff or students on your surgical services and wards developed Hepatitis (B or C) in the past 2 years?
(Yes/No)

Nursing Practices

(Results Framework Objective 3, Reference indicator 3.1: % of hospitals targeted by AIHA Infection control program with improved infection control practices of clinical staff)

21. Does your institution have infection control protocols/guidelines in place for nurses? (Yes/No)
If yes, who is responsible for reviewing and updating these guidelines? (Position) _____

22. What percentage of the nurses at your institution have received training in infection control?

Please describe the length and nature of the training:

23. How frequently do your nurses receive training on infection control practices?

Quality Improvement

(Results Framework Objective 3: Improved infection control practices based on evidence-based clinical and management practice protocols.)

24. Does your institution have written infection control protocols in place? (Yes/No)

25. What is the method utilized for developing, reviewing, and/or implementing infection control protocols at your institution?

[Note to interviewer: Try to find out whether these activities are done by a committee (which committee?), or by an individual; who directs, who determines, who reviews? What are the positions of the important actors in the process and what are their titles]

26. What public-domain resources, if any, does your institution utilize when developing/reviewing infection control protocols?

[Note to interviewer: Anticipated responses include the following: US Centers for Disease Control (CDC); World Health Organization (WHO); Internet; Cochran database]

Attachment II: Institutions contacted for survey

City Hospital #2

City Hospital # 16 (Mariinsky)

City Hospital #26

City Hospital #31

City Hospital #46 (Saint Eugene's)

Hospital of War Veterans

Psychiatry Hospital #1

Tuberculosis Hospital

City Children's Hospital #1

Children's Hospital #3 for Infectious Diseases

City Children's Hospital #17 (of St. Nikolas)

Cherepovets City Hospital

Chelyabinsk Oblast Hospital

Samara Oblast Clinical Hospital

Leningrad Oblast Clinical Hospital