

**INFECTION CONTROL TRAINING CENTERS**  
ASSESSMENT of TRAINING IMPACT on  
HOSPITAL INFECTION CONTROL PRACTICES  
  
**REPORT for ALMATY, KAZAKHSTAN**



**AMERICAN INTERNATIONAL HEALTH ALLIANCE**

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## I. Executive Summary

The American International Health Alliance (AIHA) initiated an Infection Control Program in 1997 to address the spread of hospital infections in Eurasian countries. The Infection Control Training Center (ICTC) in Almaty began operating in 2001. It 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 Kazakhstan Ministry of Health began to involve the ICTC in a consultative role to assist the government on national policy reform.

In order to assess the effectiveness of the program, AIHA conducted a telephone survey of sixteen Almaty hospitals, representing a small sample of the medical institutions in Kazakhstan. The surveyed institutions ranged in size from 125 to 605 beds (average 275 beds), with an average of 6,057 admissions per year. Twelve of the sixteen hospitals performed surgical operations, but only eleven were able to report grouped data on surgeries.

All sixteen institutions reported the presence of an Infection Control Committee, usually chaired by a senior physician. The Committees met monthly in six institutions, more often in seven institutions, and quarterly in three institutions. In fourteen institutions the Hospital Epidemiologist counted and reported Nosocomial Infections to the Committee. Surveillance occurred in all sixteen hospitals, but the definitions for Nosocomial Infection were inappropriate in thirteen. Continuous surveillance occurred in ten institutions. Active (incidence density) surveillance reporting occurred in fourteen hospitals, passive physician reporting occurred in four, microbial laboratory specimen monitoring occurred in three, process monitoring occurred in three, and retrospective and "standard methods" reporting occurred in two (a combination of different methods accounts for a total greater than 16). Neither environmental culturing nor monitoring with sanctions was reported by any of the sixteen institutions.

Credible numerator (number of infections) and denominator (patient population) data on Nosocomial Infections was available for eight hospitals. "Zero" infection rates were reported by six institutions and no data were available for two others. Surgical wound surveillance for infection was active at ten hospitals and credible numerator and denominator data were reported by all of these hospitals. But associated infection rates were correctly calculated and reported by only one institution.

Ten institutions indicated antibiotic resistance as an important problem and nine continuously performed cultures to identify resistant organisms. Nine hospitals reported surgical antibiotic prophylaxis. Universal precautions were used routinely. Two of the hospitals reported hepatitis in personnel during the past two years. All sixteen hospitals reported having written nursing guidelines for infection control which were reviewed and updated by infection control staff. A high percentage (average 64%) of nurses received infection control training.

All sixteen institutions offered written material on quality improvement for infection control. Almost all institutions accepted the need for administrative and personnel support for infection control. But, confirmatory data were available at only half of the institutions. This, together with the apparent inability of all but one institution to correctly calculate a surgical infection wound rate, suggested that program performance was much lower than the reported result.

## **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 Regionwide 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. Personnel from the St. Petersburg ICTC and the Tbilisi ICTC conducted the training and initial assessments for the Almaty ICTC and the Center opened in January 2001.

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 2<sup>nd</sup> *Edition Basic Infection Control Manual* created by the St. Petersburg/Boston 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.

Due to significant budget constraints, AIHA provided minimal ongoing support to the four ICTCs, mostly through a few training workshops, supply of manuals, and Internet connectivity.

## **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 number of hospitals demonstrating 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). Bauyrzhan Amirov, Program Coordinator, and Dariya Asylbekova, Program Coordinator and M&E Coordinator, at AIHA/Almaty 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 and 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 hospitals were the focus of the survey. The surveyed institutions ranged in size from 125 to 605 beds (average 275 beds), with 580 to 19,125 admissions per year (average 6,057 admissions per year). Twelve of the sixteen hospitals performed surgical operations, but only eleven were able to report grouped data on surgeries. These eleven performed from 247 to 5,513 surgeries per year, with an average of 1,991 surgeries in the previous year.

## **V. FINDINGS**

### **Infection Control Committee Organization and Function**

All sixteen institutions reported the presence of an Infection Control Committee. The Committee was most frequently chaired by a senior physician (Deputy Chief Physician - 13/16, Chief Physician – 1, Department Directors - 2). The Committee membership usually included a Hospital Epidemiologist (15/16), a Microbiologist (9/16), an Infection Control Nurse (9/16), a Pharmacist (7/16), Department Chairmen (6/16), the Chief Nurse (5/16), the Chief of Obstetrics (4/16), and the Chief Surgeon (4/16). Other members included were: an Anesthesiologist, the Chief of Pediatrics, a Neonatologist, a Midwife, the Chief of the Blood Bank, Head of Disinfection and Sterilization, the Supply Chief, the Chief Engineer (3 cases) and the Chief of Physical Therapy. These Committees met monthly in six institutions, more frequently in seven institutions, and quarterly in 3 institutions. In fourteen hospitals, the Hospital Epidemiologist counted and reported Nosocomial Infections to the Committee. In the other two hospitals, the Infection Control Nurse or the Department Chairmen fulfilled this function. In fifteen of the sixteen hospitals, the reporting staff person was considered to be formally trained in infection control.

### **Surveillance Methods, Reports and Data**

Surveillance for Nosocomial Infections was reported to occur in all sixteen hospitals. The definition(s) for Nosocomial Infection were appropriate in 13 of the 16 institutions, and may be appropriate in another two by reference to an undefined third party criterion. In the remaining hospital, the definition lacked an appropriate measure of timing of infections, the most common definitional error found in these surveys. Continuous surveillance was practiced in ten institutions. Surveillance was conducted monthly in two hospitals, weekly in three hospitals, and "systematically" in one hospital. Active (incidence density) surveillance reporting occurred in fourteen hospitals, passive physician reporting occurred in four, microbial laboratory specimen monitoring occurred in three, process monitoring occurred in three, and retrospective and "standard methods" were used in two (combinations of different methods account for a total greater than 16). Neither environmental culturing nor monitoring with sanctions was reported by any of the sixteen hospitals.

Credible numerator (number of infections) and denominator (patient population) data on Nosocomial Infections were available for eight hospitals. Six of the institutions reported “zero” infection rates and no data were available for two others.

Surgery is not performed in four of the sixteen hospitals. In another two, surgery is performed but surveillance of wound infections is not conducted, leaving ten hospitals in which surgical wound surveillance for infection was active. In these ten, credible numerator and denominator data were reported by all, but associated infection rates appeared to have been correctly calculated and reported to the survey by only one institution. The reason for this discrepancy could not be surmised.

### **Surveillance of Antibiotic Use and Antibiotic Resistance**

Ten of the sixteen institutions indicated that antibiotic resistance was an important problem in their institution. Among the twelve hospitals performing surgery, surgical antibiotic prophylaxis was not provided in three of the hospitals. In the nine hospitals providing surgical antibiotic prophylaxis, one was unable to report data; cephalosporins were used in six, erythromycin was used in three, gentamicin was used in three, amikacin was used in two, ampicillin was used in two, penicillin was used in two and kanamycin and a third generation penicillin were used in one each. Cultures to identify antibiotic resistance were reported as being continuously performed in nine institutions. Cultures were performed in two others for treatment only and in another two, by a reference laboratory only. One hospital conducted only TB cultures for sensitivity and the remaining two hospitals reported less frequent testing. When cultures were done (13/16), *Staphylococcus aureus* (12/13) and *Pseudomonas aeruginosa* (3/13) were the most frequently reported isolates.

### **Universal Precautions (Standard Practice)**

Universal precautions were used in all sixteen hospitals, enforced by infection control procedures in six and by administrative procedures in all. In hospitals performing surgery, gloves were reported as routinely used during surgery by all participants and during cleanup and instrument processing at all institutions. Needles were not reused at fifteen of the hospitals and autoclaving was practiced in the remaining hospital. Two of the fifteen hospitals had cases of hepatitis reported in personnel during the past two years.

### **Nursing Practices Related to Infection Control**

All sixteen hospitals reported written nursing guidelines for infection control. These guidelines were reviewed and updated by the Hospital Epidemiologist (14/16), the Infection Control Nurse (4), a Nursing administrator (1), or the Deputy Chief Physician (3), or a combination of these staff members. A high percentage (average 64%) of nurses received infection control training. No data were available on the frequency of training for nine hospitals. It was conducted annually or more frequently in eight and less regularly in the remaining four hospitals.

### **Quality Improvement for Infection Control**

All sixteen institutions had written material on quality improvement for infection control, developed by the Infection Control Committee (6) or a Government Service (11). Fourteen hospitals cited the Ministry of Health (9) and AIHA (14) as sources for infection control protocols.

## **VI. Conclusions**

While descriptive questionnaire data from this type of survey are open to questions of reliability and completeness, the responses of these trained respondents, with some notable exceptions, indicated that they understood the inquiries and were able to confirm large parts of infection control practices in their institutions.

Almost all institutions in the sample had accepted the need for administrative and personnel support for infection control programs. An Infection Control Committee with senior staff representation and an individual “trained” as a Hospital Epidemiologist met frequently at each institution. Surveillance for hospital related infections based on an appropriate definition was reported to occur at nearly all institutions.

However, data to confirm the expected output of these programs were available from only half the institutions, and an implausible “zero” infection rate was reported by six. Further, only 50% of respondents considered hospital infections an important concern and only ten reported antibiotic resistance as an important concern. These results, together with the apparent inability of all but one institution to correctly calculate a surgical infection wound rate, suggest that program performance is much lower than reported by these institutions.

The practices of universal precautions, such as needle and glove safety and nursing infection control education and practices, were reported at a relatively high level by questionnaire respondents. In view of the lack of confirmatory data at other levels of the questionnaire, assurances from other sources are necessary to confirm these positive results. Materials from both the National Ministry of Health and AIHA were important sources of information for infection control guidance at the surveyed institutions.

**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.

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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? \_\_\_\_\_

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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]*

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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**

Urology Research Center named after Jarbusynov

Akmola Oblast Hospital

Kostanay Oblast Pediatric Hospital

Kyzyl Orda City TB Clinic

Kostanay City Children's Infection Hospital

Shymkent City Maternity House #2

Astana City Maternity House #1

Shymkent City First Aid Hospital

Semipalatinsk Hospital

Kyzyl Orda Oblast Infectious Hospital

Kyzyl Orda Oblast Infection Hospital

Kyzyl Orda City Maternity House

Shymkent City Maternity House #4

Shymkent Oblast Hospital

Hospital of Kazakh-Turkish University, Shymkent City

Kazakh Oncology and Radiology Institute