**ASSOCIATED HOSPITAL**

**GOVERNMENT MEDICAL COLLEGE KATHUA**

# HOSPITAL ACQUIRED INFECTION POLICY

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# HOSPITAL ACQUIRED INFECTION POLICY

**PURPOSE**

To ensure that the hospital staff adhere to the Hospital Acquired Infection policy.

**SCOPE**

All Health Care Workers in the Hospital.

**DEFINITION:**

An infection caught while hospitalized. The medical term for a hospital-acquired infection is *nosocomial*. Most *nosocomial* infections are due to bacteria. Since antibiotics are frequently used within hospitals, the types of bacteria and their resistance to antibiotics is different than bacteria outside of the hospital. *Nosocomial* infections can be serious and difficult to treat.

A *nosocomial* infection is strictly and specifically an infection "not present or incubating prior to admittance to the hospital, but generally occurring 48 hours after admittance."

**TYPES OF HOSPITAL ACQUIRED INFECTION**

| S.no. | Type of HAI | Criteria |
|---|---|---|
| 1 | Surgical Site Infection (SSI)** | Any purulent discharge, abscess, or spreading cellulitis at the surgical site during the month after the operation |
| 2 | Urinary Infection | Positive urine culture (1 or 2 species) with at least $10^5$ bacteria/ ml, with or without clinical symptoms |
| 3 | Respiratory Infection | Respiratory symptoms with at least two of the following signs appearing during hospitalisation: — cough — purulent sputum<br>— new infiltrate on chest radiograph consistent with infection |
| 4 | Vascular Catheter Infection | Inflammation, lymphangitis or purulent discharge at the inser- tion site of the catheter |
| 5 | Septicemia | Fever or rigrous and atleast one positive blood culture. The infections may appear in hospital in the form of epidemic (large number of cases in short period) or may be endemic (cases spread over an extended period) or sporadic (when cases occur singly). |

**** Format attached.**

**MAIN ROUTES OF TRANSMISSION OF NOSOCOMIAL INFECTION.**

| ROUTER | DESCRIPTION |
|---|---|
| **Contact transmission** | The most important and frequent mode of transmission is by direct contact. |
| **Droplet transmission** | Transmission occurs when droplets containing microbes from the infected person are propelled a short distance through the air and deposited on the host's body; droplets are generated mainly by coughing, sneezing, and talking, and during the performance of certain procedures, such as bronchoscopy. |
| **Airborne transmission** | Dissemination can be either airborne droplet nuclei (5 µm or smaller in size) of evaporated droplets in the air for long periods of time or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may become inhaled by a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors; therefore, special air-handling and ventilation are required to prevent airborne transmission. |
| **Common vehicle transmission** | This applies to microorganisms transmitted to the host by contaminated items, such as food, water, medications, devices, and equipment. |
| **Vector borne transmission** | This occurs when vectors such as mosquitoes, flies, rats, and other vermin transmit microorganisms. |

## INFECTION CONTROL COMMITTEE

An infection control committee provides a forum for multidisciplinary input and cooperation, and information sharing. This committee should include wide representation eg. Management, physicians, other health care workers, clinical microbiologist, pharmacist, central supply, maintenance, housekeeping, training services. The committee has following tasks:

- To review and approve yearly programme of activity for surveillance and prevention.
- To review epidemiological surveillance data and identify areas for intervention.
- To access and promote improved practice at all levels of the health facility.
- To ensure appropriate staff training in infection control and safety.
- To review risks associated with new technologies, and monitor infectious risks of new devices and products, prior to their approval for use.
- To review and provide input into investigation of epidemics.
- To communicate and cooperate with other committees of the hospital with common interests such as Pharmacy and Therapeutics or Antimicrobial Use Committee, Biosafety or Health and Safety Committees, and Blood Transfusion Committee.

## INFECTION CONTROL COMMITTEE RESPONSIBILITY

### Role and Responsibility of Hospital Administrator

- Establishing a multidisciplinary Infection Control Committee.
- Identifying appropriate resource for a programme to monitor infections and apply the most appropriate method of preventing infection.
- Ensuring education and training of all staff on the prevention of infection in disinfection and sterilization techniques.
- Delegating technical aspect of hospital hygiene to appropriate staff, such as: nursing, housekeeping, maintenance, clinical microbiology laboratory.
- Periodically reviewing the status of nasocomial infection and effectiveness of interventions to contain them.
- Reviewing, approving and implementing policies approved by the Infection Control Committee.
- Participate in outbreak investigation.

### Role and Responsibility of Physician

- Provide direct patient care using practices which minimizes infections.
- Serving on the Infection Control Team.
- Supporting the infection control team.
- Complying with the practices approved by the Infection Control Committee.
- Notifying cases of hospital-acquired infection to the team, as well as the admission of infected patients.
- Instituting appropriate treatment for any infections they themselves have, and taking steps to prevent such infections being transmitted to other individuals especially patients.

**Role and Responsibility of Nursing Staff**

*The senior nursing administrator is responsible for:*

- Promoting the development and improvement of nursing techniques, and ongoing review of aseptic nursing policies, with approval by the Infection Control Committee.
- Supervising the implementation of techniques for the prevention of infections in specialized areas such as operation theatre, the ICU, the maternity unit and newborns.
- Monitoring of nursing adherence to policies.

*The nurse in charge of a ward is responsible for:*

- Maintaining hygiene, consistent with hand washing and use of isolation.
- Reporting promptly to the attending physician any evidence of infection in patients under the nurse's care.
- Limiting patient exposure to infections from visitors, hospital staff, other patients, or equipment used for diagnosis or treatment.
- Maintaining a safe and adequate supply of ward equipment, drugs and patient care supplies.

*The nurse in charge of infection control is a member of the infection control team and responsible for:*

- Identifying nasocomial infections.
- Participating in training of personnel.
- Participating of the type of infection and infecting organism.
- Providing expert consultative advice to staff health and other appropriate hospital
- Liaison with public health and with other facilities where appropriate.

## HOSPITAL ACQUIRED INFECTION SURVEILLANCE

For effective implementation of the infection control programme and ensuring effectiveness of the activities related to infection control, hospitals need to carry out the surveillance of these activities and take appropriate corrective and preventive actions based on the results of the surveillance.

Surveillance is one of the most important components of an effective infection control programme. It is defined as the systematic collection, analysis, interpretation, and dissemination of data about the occurrence of HAIs. Surveillance of hospital associated infections involves recording and counting of infections arising in the hospital. Surveillance provides ways to identify and clarify quality issues, understand the causes and then, plan corrective actions to rectify them and in the long run, bring about improvements.

Hospitals need to carry out targeted surveillance of high risk or critical areas and procedures, as identified by the hospital.

The minimum activities that hospitals needs to carry out for the surveillance of HAI is Microbiological surveillance of critical areas

**MICROBIOLOGICAL SURVEILLANCE OF CRITICAL AREAS**

- Do not perform routine environmental sampling in any hospital location except the operation theatres. Presence of an organism on a surface does not confirm it as the cause of infection in patients in that area even if it is the same strain
- Routine environmental surface sampling (swabs) should not be done in areas like the ICU and/or wards. Take corrective actions if any growth of micro-organisms is found to be positive.

**Environmental sampling should be done for the following purposes only:**

Monitoring the effectiveness of the cleaning and disinfection procedures in certain situations as a part of quality assurance e.g., the operation theatre

- ✓ Evaluation of efficiency of an OT ventilation system (high efficiency particulate air {HEPA} filtered positive pressure air supply system)
- As a part of epidemiological investigation of an outbreak in which environmental sources/reservoirs or transmission routes are suspected
- Monitoring the quality of water for drinking, cleaning, surgical scrub and after flooding.

**MICROBIOLOGIC MONITORING OF THE OT**

Since the OT is designed to function as a clean room and microbial burden control is the most important here, routine environmental surface and air sampling should be done in all OTs.

**OT SWABS:**

- Surface swabs need to be obtained from each OT for microbiological culture testing as per hospital infection control programme
- The sampling process should be as follows:

- Sampling should be done as soon as the OT is opened in the morning before any cleaning is done
    - Obtain the required numbers of sterile swabs and media from the microbiology lab before taking samples; keep the swabs and media outside the refrigerator for at least 30 minutes (they should be at room temperature when sample is taken)
    - Label the sampling media with the date, OT number, and sample site (e.g., table, trolley etc.)
    - Change into OT dress, wear cap, mask, sterile gown and sterile gloves and enter the OT with the swabs and media
    - The ventilation system/AC should be kept off. It may be turned on if air sampling is to be done at the same time
    - Swabs should be collected from the following locations in each OT (different from sampling after new OT construction or OT renovation):
        - OT table
        - OT lights
        - Sterile instruments trolley (If more than one trolley is present all should be sampled)

- The medication preparation surface of the anaesthesia machine
- Floor – one swab of the floor adjacent to the OT table
- Any one wall at waist to shoulder height

❖ Collect samples using aseptic technique

❖ The samples should be sent to the laboratory immediately after collection. Do not place collected samples in the refrigerator

❖ Maintain a record of the samples sent

➢ The laboratory should test the swabs for presence of both aerobic and anaerobic bacteria (both spore forming and non-spore forming ones)

➢ Any growth in the swabs should immediately be communicated by the laboratory to the hospital authorities

➢ The test reports should be informed to the Chairperson, Infection Control Committee and filed for

➢ records.

**Table : Suggested actions for OT swab culture**

| ORGANISM GROWN | REMARK | ACTIO N |
|---|---|---|
| No organisms grown | Acceptable | Use the OT |
| Skin commensals e.g., S epidermidis (sparse growth in any 1-2 swabs from the sample set) | Acceptable | Use the OT (unless the lab reports heavy growth or growth from multiple swabs). Re-clean positive growth locations before using the OT. |
| Known pathogen (S aureus) | Unacceptable | Do not use the OT. Re-clean, re-fogg and repeat swab samples |
| Gram negative organisms (aerobic/ anaerobic) | Unacceptable | Do not use the OT. Re-clean, re-fogg and repeat swab samples |
| Aerobic/anaerobic spore bearers | Unacceptable | Do not use the OT. Re-clean, re-fogg and repeat swab samples |
| Mixed growth | Unacceptable | Do not use the OT. Re-clean, re-fogg and repeat swab samples |

**CORRECTIVE AND PREVENTIVE ACTIONS IN CASE OF UNACCEPTABLE RESULTS**

- Postpone elective cases. Repeat cleaning, disinfection and OT swabs. The procedure should be supervised by the OT in-charge
- All cases operated in the duration between sampling and reporting of unacceptable swab should be
- identified and followed up for surgical site infection
- Investigate for the causes of unacceptable results. Check the chemical dilution methods, cleaning techniques, cleanliness of mops and buckets, function of the fogger machine, etc. The lab should check the sample collection and processing methods used.

**OT AIR SAMPLING**

- Air sampling should be done regularly once a week for OTs with high efficiency particulate air (HEPA) filtered positive pressure ventilation system to monitor the efficacy of the system
- In OTs without a ventilation system it should be done once a month and whenever air is suspected as a source/transmission route of surgical site infection.
- The procedure for sampling by settle plate method is as follows:
    - Obtain the required numbers of culture media plates from the microbiology lab. Before taking samples, keep them outside the refrigerator for at least 30 minutes (they should be at room temperature when sample is taken)
    - Sampling should be done on an empty OT immediately after opening the OT in the morning
    - If OT swabs are to be taken at the same time, then **air sampling should be done before taking swab samples**
    - The ventilation system/air conditioner should be turned on and allowed to run for at least 10 minutes with the OT closed and empty before sampling
    - The person performing the sampling should wear sterile gown, sterile gloves, cap and mask and OT dress and footwear before entering the OT
    - The culture plate should be labeled with the date, OT number and sampling location before taking it into the OT
    - Expose one plate on the OT table for 40 minutes. This should be done aseptically without touching the culture media or contaminating the plate lid. The technique should be taught to the OT staff by the microbiology lab
    - After 40 minutes the plates should be closed, sealed and sent to the lab for further processing

- The lab should report the total colony counts after 24 hours of incubation at 37°C. The predominant
- type of growth, if any, should be identified and reported.
- The following results (both conditions together) will be considered satisfactory for an OT with a

  HEPA filtered positive pressure ventilation system:

  - No growth of any organism
  - No growth of any fungus, gram-negative organisms or known pathogens such as staphylococcus aureus
- If results are not satisfactory, investigation should be done and appropriate corrective actions are needed to be taken
- In case of unsatisfactory results,
  - Do not use the OT until the problem is resolved
  - Monitor the cases operated since the last acceptable result onwards
- Settle plate positivity rate pattern should be studied and used in interpretation of test results in an individual set-up
- Test reports should be informed to the hospital authorities and filed for records.