

## **Analyses of postoperative early infectious complications in Georgian Critical Care Medicine Institute.**

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Despite progress in this field, incidence of hospital infections is still high. Here are discussed reasons of early post-operative infectious complication and are brought ways of their prevention.

**Key words: postoperative, early infectious complications.**

### **Actuality:**

Despite modern achievements in all areas of science, huge progress in public health and hospital care, highly equipped clinics and technologically advanced university hospitals, postoperative infections continue to develop.

Postoperative Hospital acquired infection (HAI) - also called nosocomial infections occur worldwide and affect both developed and resource-poor countries.

Infections acquired in health care settings are among the major causes of death and increased morbidity among hospitalized patients. They are a significant burden both for the patient and for public health.

A prevalence survey conducted under the auspices of WHO showed at any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital.

Patient care is provided in facilities which range from highly equipped and technologically advanced clinics to front-line units with only basic facilities

The highest frequencies of nosocomial infections were reported from hospitals in the Eastern Mediterranean and South-East Asia Regions (11.8 and 10.0% respectively), with a prevalence of 7.7 and 9.0% respectively in the European and Western Pacific Regions.

The economic costs from Hospital-acquired infections are considerable.

The increased length of stay for infected patients is the greatest contributor to cost.

### **Introduction:**

Studies showed that the overall increase in the duration of hospitalization for patients with surgical wound infections was 8.2 days, ranging from 3 days for gynecology to 9.9 for general surgery and 19.8 for orthopedic surgery. Prolonged stay not only increases direct costs to patients or payers but

also indirect costs due to lost work. The increased use of drugs, the need for isolation, and the use of additional laboratory and other diagnostic studies also contribute to costs.

Postoperative infection accounts for 14% to 25% of hospital acquired infections.

Nowadays, despite improved sepsis and surgical techniques, postoperative infectious complication rates ranged from 0.5% to 23%.

Frequency of their development depends on the type of surgery and patient characteristics:

- Clean (class I) - 1, 5 – 6, 9 %.
- Clean-contaminated (class II) – 7,8- 11,7%.
- Contaminated (class III) – 12,9 -17%.
- Dirty and infected (class IV) – 14-40%

The most common types of Postoperative infections are:

- surgical site infections - 0,5 -15%;
- Respiratory infections - 3%;
- Urinary infections - 4,7%;
- Vascular catheter infection - 7,6%;
- Bloodstream infections - 5%.

Wound infections have traditionally been thought of as infections in a surgical wound occurring between the skin and the deep soft tissues—a view that fails to consider the operative site as a whole. To prevention of these wound infections more effectively, it has become apparent that definitions of operation-related infection must take the entire operative field into account.

Accordingly, the Centers for Disease Control and Prevention currently prefer to use the term surgical site infection (SSI). SSIs can be classified into three categories:

1. Superficial incisional SSIs (involving only skin and subcutaneous tissue).
2. Deep incisional SSIs (involving deep soft tissue),
3. Organ or space SSIs (involving anatomic areas other than the incision itself that are opened or manipulated in the course of the procedure).

Many factors promote infection among hospitalized patients: decreased immunity among patients; the increasing variety of medical procedures and invasive techniques creating potential routes of infection; and the transmission of drug-resistant bacteria among crowded hospital populations, where poor infection control practices may facilitate transmission.

The following three factors are the determinants of any infectious process:

1. The infecting organism (in surgical patients, usually bacteria);
2. The environment in which the infection takes place (the local response);
3. The host defense mechanisms, which deal systemically with the infectious process.

The organisms that cause HAI are often drug-resistant. The regular use of antimicrobials for treatment therapy or prophylaxis promotes the development of resistance. Through antimicrobial-driven selection and the exchange of genetic resistance elements, multi-drug resistant strains of bacteria emerge.

Many strains of organisms are currently resistant to most or all antimicrobials which were once effective.

Many components of the bacterial contribution to wound infection now are clearly understood and measures to control bacteria have been implemented. The host factors become more apparent. In addition, interactions between the three determinants play a critical role.

During the last two years (2010-2011) 158 surgical patients were hospitalized (51 women Aged 34-61, and men aged 37-72) in surgical department of Georgian Critical Care Medicine. 158 operations performed:

- Neurosurgical - 63
- Traumatology - 12
- General Surgical -74
- Gynecologic -2
- Urological – 7

Depending on the type of surgery those 158 are ranked in the following way:

- Clean (class I) -95
- Clean-contaminated (class II) -41
- Contaminated (class III) -23
- Dirty and infected (class IV) – 0

Average duration of hospitalization has been:

- For Neurosurgery patients 8,4 days
- For Traumatological 5,6 days
- For Gynecologic Urological and General Surgery - 3,7 days

The postoperative HAI observed in 3 cases (1, 9%):

In the first case - superficial incisional surgical site infection after hernioplasty, patient had adiposity of fourth degree. In other two cases pneumonia (ventilator-associated) developed. Clean air systems have very strong advocates, but they also have equally vociferous critics. However, clean air systems are here to stay worth mentioning that we haven't used clean air systems so far.

Our study shows that it is possible to obtain excellent results without such systems.

Nevertheless, we always must remember that the presence of a clean air system does not mean that basic principles of asepsis and antisepsis should be abandoned HAI are commonly transmitted when hospital officials become complacent and personnel do not practice correct hygiene regularly. Also, increased use of outpatient treatment means that people who are hospitalized are more ill and have more weakened immune systems than may have been true in the past. Moreover, some medical procedures bypass the body's natural protective barriers. Since medical staff moves from patient to patient, the staff themselves serves as a means for spreading pathogens. Essentially, the staff acts as vectors.

**Summary:**

Prevention of nosocomial infections requires an integrated, monitored program which includes the following key components: limiting transmission of organisms between patients in direct patient care through adequate hand washing and glove use, and appropriate aseptic practice, isolation strategies, sterilization and disinfection practices, and laundry controlling environmental risks for infection protecting patients with appropriate use of prophylactic antimicrobials, nutrition, and vaccinations limiting the risk of endogenous infections by minimizing invasive procedures, and promoting optimal antimicrobial use surveillance of infections, identifying and controlling outbreaks prevention of infection in staff members enhancing staff patient care practices, and continuing staff education. Infection control is the responsibility of all health care professionals - doctors, nurses, therapists, pharmacists, engineers and others.

Thus, it is important that we seek to continually improve existing infection control policies and programs. Effective infection control programs are essential to controlling and preventing nosocomial infections.

Applying correct strategies for the prevention of surgical site infection help to reduce surgical patient's morbidity, mortality and length of stay, and save cost for the

healthcare institutions we use the WHO recommendations and protocols of Prevention and Management Programs of Hospital-Acquired Infection.

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