of *Proteus inconstans* have proved resistant to the agent. There are strains with cross resistance to 3 antibiotics, gentamicin, tobramycin and dibekacin.

The fact that the frequency of isolation of gentamicin-resistant gram-negative rods in Japan is less than that in the USA may be considered related with the less consumption of this antibiotic in Japan.

3) Frequency of isolation of gram-positive bacteria

The infection caused by gram-positive microbes is on the decrease. However, the decrease is not found in all infections diseases by the organisms.

*Staphylococcus aureus* which is the representative species of this group of bacteria has in recent years been calling for attention to the increase in its kanamycin-resistant strains. Attention is also called to the infection caused by *Staphylococcus epidermidis* which has been considered non-pathogenic. Especially, the cloxacillin-resistant strains of *Staphylococcus epidermidis* are considerably frequently isolated. This species is isolated in almost all cases from inpatients.

The coagulase-negative, DNase-positive staphylococci were very rare organisms in 1965, but have been on the increase in recent years. The cause for this increase is unknown, but if DNase proves related with pathogenicity, it will create a problem in the future.

The biotyping of the strains of *Staphylococcus epidermidis* show that many of them are classified with type 3 or type 4. However, the frequencies of their isolation vary from hospital to hospital.

4) Summary

a) The increasing tendency in the incidence of infection caused by gram-negative rods is calling for attention.

b) Alterations in the pathogenic gram-negative rods have occurred, and many such organisms are resistant to multiple antibiotics.

c) Gentamicin-resistant microbes that used to be rarely isolated have begun to appear relatively frequently.

d) The incidence of infection caused by gram-positive cocci tends to decrease. However, the frequency of isolation of such organisms has not decreased so much in some infections diseases.

e) The frequency of isolation of *Staphylococcus epidermidis* is on the increase, some of the organisms of this species being resistant to cloxacillin.

(1) The Bacterial Infection in Japan

ii) Prevention and Control of Hospital Infection

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Hospital infections have long been known in the medical literature. Of late patterns of infections disease have considerably changed. Hospital infection develope during or after hospitalization and those acquired during previous hospitalization or incubating on admission are to be excluded.

Infections that have an unknown incubation period but occur in the hospital should be considered nosocomial unless clinical or epidemiological evidence indicate community acquisition.

The rapidly increasing complexity of this disease has attracted the attention of
medical staff everywhere. In order to understand the real mechanisms of hospital infections, it is necessary to analyse the condition under which the disease occurs, and on the basis of this analysis one is able to establish the method of prevention and control.

When investigating hospital infections, we need to consider and examine the relevant microbiological site, host conditions, the special environment of the hospital, and the various medical treatments and laboratory examinations which may affect or complicate the development of the diseases.

The mechanisms of hospital infections fall into two categories:

1) Exogenous infections, i.e. cross infection: We may observe many examples of this kind of infections in the hospital words, staphylococcal, streptococcal, salmonella, pseudomonas, serratia infections, measles, rubella, mumps, varizella-zoster and respiratory infections of viral etiologies.

2) Endogenous infection: Recently there has been an increase in the numbers of opportunistic infections accompanying such diseases or conditions as: malignant tumors, leukemia, diabetes mellitus, nephrotic syndromes, cerebral and spinal cord injuries after traffic accidents and post-organ transplantation. Terminal infections are sometimes caused by low virulent microorganisms such as pseudomonas, serratia, proteus, klebsiella, fungi and herpes-group viruses.

Besides cases of exogenous and endogenous infections there also are many otherwise healthy individuals such as newborns or premature babies and the aged whose general resistance are relatively low so that they are easily infected. Many of the regular hospital activities such as chemotherapy, antitumor therapy, immunosuppressive therapy, corticosteroids, surgical operation, hemodialysis, catheterization, blood transfusion, paracentesis create conditions under which patients may be infected. Furthermore the hospital environment is contaminated by various pathogenic microorganisms. Therefore it is necessary to have a fundamental knowledge of microbiology and practical method of control.

At Iwate Medical University we have developed a special committee for the control of hospital infections. This committee publishes a manual for the control of the hospital infection and staff education. The function of the manual is to report on the occurrence of hospital infections and further to inform the staff of the appropriate methods or disinfection and sterilization necessary to control the diseases. In our hospital a specially trained nurse oriented in epidemiology is assigned to control the hospital infection. Furthermore, in order to decrease the number of cases of hospital infections, sanitation, sterilization and disinfection procedures should be carried out with ceaseless efforts.

(2) Points at Issue in the Chemotherapy of the Bacterial Infection in the Field of Internal Medicine

i) Respiratory Infectious Disease

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Recently, gram negative bacilli are more frequently isolated from sputum of the respiratory infectious diseases than gram positive cocci. This finding may be elucidated