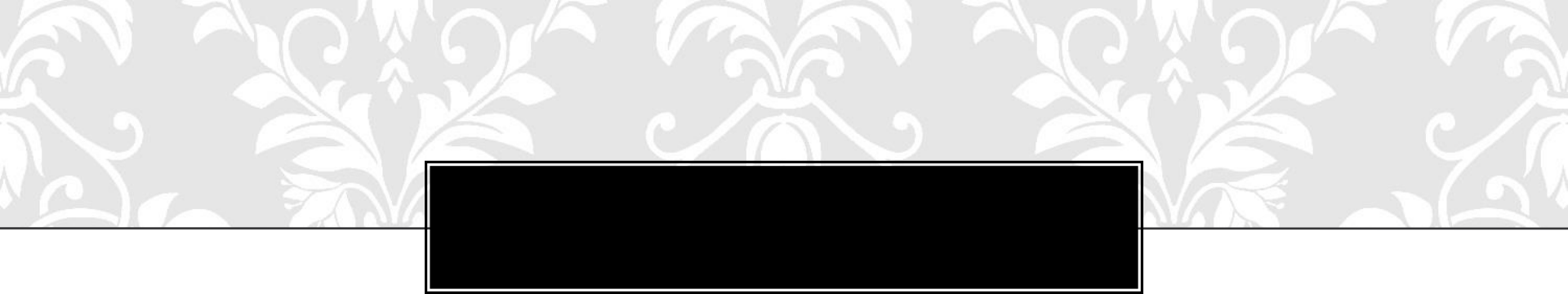


**NOSOCOMIAL
INFECTION
COMMON IN
PAKISTAN**

DR. Hira Mushtaq



Infection developing in patients after admission to the hospital, which was neither present nor in the incubation period at the time of hospitalization

May become apparent during patient's stay or after discharge

Attendants and hospital staff can also acquire infectious agents

WHERE DO MICROBES COME FROM

Patients' own flora

- Cross infection from medical personnel
- Cross infection from patient to patient
- Hospital environment (inanimate objects)
- Air
- Water
- Dust
- IV fluids & catheters
- Beddings
- Instruments
- Ventilators and cooling equipments

SOURCE OF INVADING BACTERIA

During hospitalization there are two ways by which a patient can acquire other invading bacteria i.e.

Endogenous : own normal flora invading during unhygienic conditions or cross contamination

Exogenous: from other patients, staff or environment (hospital surfaces)

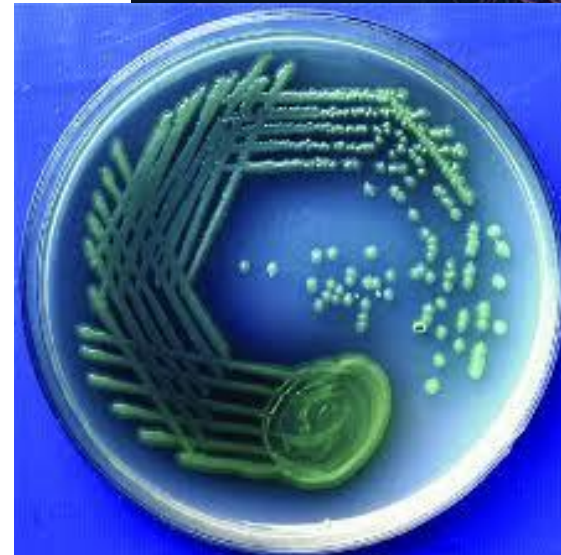
Bacterial species attaining high antibiotic and disinfectant resistance or endospore forming species are of major concern in causing nosocomial infections

COMMON HAI INCLUDE:

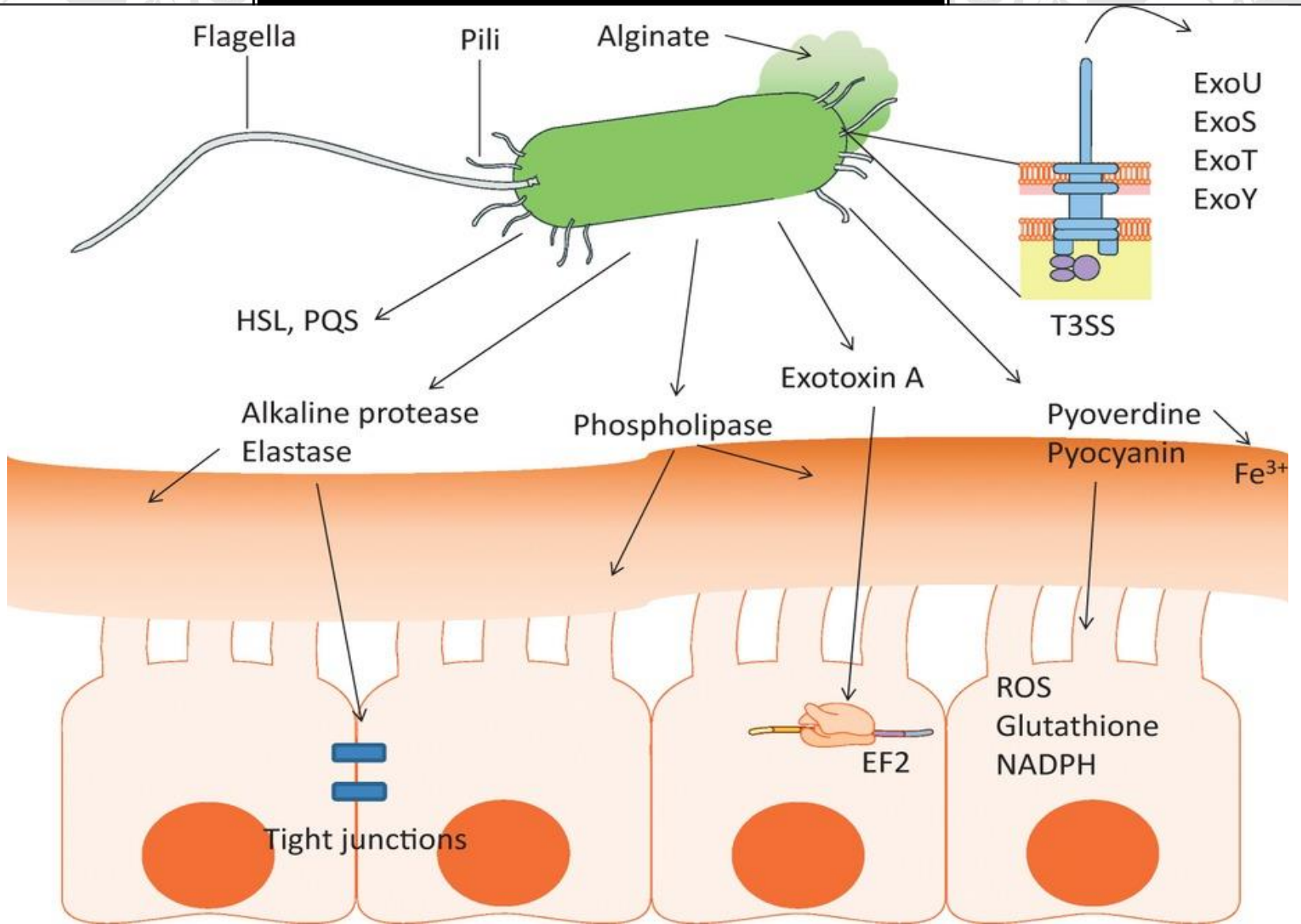
- Multidrug resistant *Staphylococcus aureus* (MRSA)
- *Vancomycin resistant Enterococcus faecalis* (VRE)
- *Pseudomonas species*
- *Enterobacter species*
- *Serratia species*
- *Proteus*
- *E.coli species*

PSEUDOMONAS AERUGINOSA

- Highly resistant Opportunistic bacteria of humans infecting urinary tract, open wounds and burns and circulatory system
- Is an gram negative, aerobic, rod shaped bacteria
- Occurs in single or short chains
- Motile with 3 polar flagella
- Produce characteristic water soluble pigment (pyocyanin, pyoverdine and pyorubin)



PATHOGENESIS





Skin infection of burns



PREVENTIVE MEASURES

Patients and caregivers should:

1. keep their hands clean to avoid getting sick and spreading germs that can cause infections
2. wash their hands with soap and water or use alcohol-based hand sanitizer, particularly before and after caring for wounds or touching a medical device
3. remind healthcare providers and caregivers to clean their hands before touching the patient or handling medical devices
4. allow healthcare staff to clean their room daily when in a healthcare setting

ESBL ENTEROBACTERIACEAE

- Enterobacteriaceae family include *Escherichia coli* (*E. coli*) and *Klebsiella pneumoniae*
- To survive the effects of antibiotics, germs are constantly finding new defense strategies, called “resistance mechanisms.”
- Enterobacteriaceae can produce enzymes called extended-spectrum beta-lactamases (ESBLs).
- ESBL enzymes break down and destroy some commonly used antibiotics, including penicillins and cephalosporins, and make these drugs ineffective for treating infections.
- fewer antibiotic options available to treat ESBL-producing Enterobacteriaceae infections
- Carbapenems are one of the few remaining antibiotics that can treat ESBL-producing germs, but resistance enzymes that destroy these antibiotics are on the rise, too.



PEOPLE AT RISK

commonly occur in people with exposure to healthcare, including those in hospitals and nursing homes.

However, unlike many other resistant germs, ESBL-producing Enterobacteriaceae can also cause infections in otherwise healthy people who have not been recently been in healthcare settings.

In healthy people, this often means urinary tract infections.

PREVENTIVE MEASURES

- Keeping your hands clean is one of the most important steps you can take to avoid getting sick and spreading germs that can cause infections. Use soap and water or alcohol-based hand sanitizer.
- ESBL-producing germs live in the gastrointestinal (GI) tract, so it is especially important to clean your hands after using the bathroom and before eating or preparing food.
- You should remind healthcare providers and other caregivers to clean their hands before they care for you and before they handle any medical devices.