
Listeria

General characteristics

- 19 species
  - *Listeria monocytogenes*- most important human pathogen
- Gram-positive rods
- Facultative anaerobes
- Non-spore forming

Listeria monocytogenes

- Short , nonbranching, gram-positive rods
- Facultative anaerobes
- Capable of growth at a broad temperature range (1° C to 45° C) and in a high concentration of salt.
- Motile at room temperature (characteristic end-over-end tumbling motion)
- Weakly beta-haemolytic on BA
- Facultative intracellular pathogen

Epidemiology

Widely distributed in nature

Human disease restricted primarily to several well-defined populations:

- neonates
- the elderly
- Pregnant women
- patients with defective cellular immunity.

Primary source is **consumption** of contaminated food

Also, mother to child in utero or at birth.

Listeria monocytogenes

- Virulence factors:
  - Haemolysin(listeriolysin O)- damages the phagosome membrane preventing killing of the organism
  - Catalase
  - Phospholipase C
  - Surface protein p60- induces phagocytosis through ↑adhesion and penetration

Clinical manifestations

1. **Pregnant women**

Most infections ocuur during the third trimester

Infected

Non-specific influenza-like symptoms-may resolve without treatment

Clinical manifestations

2. **Neonates**

1)**Early-onset disease**,

acquired transplacentally in utero

Abortion, stillbirth or premature birth

Granulomatosis infantiseptica- severe form of early-onset listeriosis

- formation of abscesses
- granulomas in multiple organs
- high mortality rate unless treated promptly.

2) **Late-onset disease**

acquired at or soon after birth.

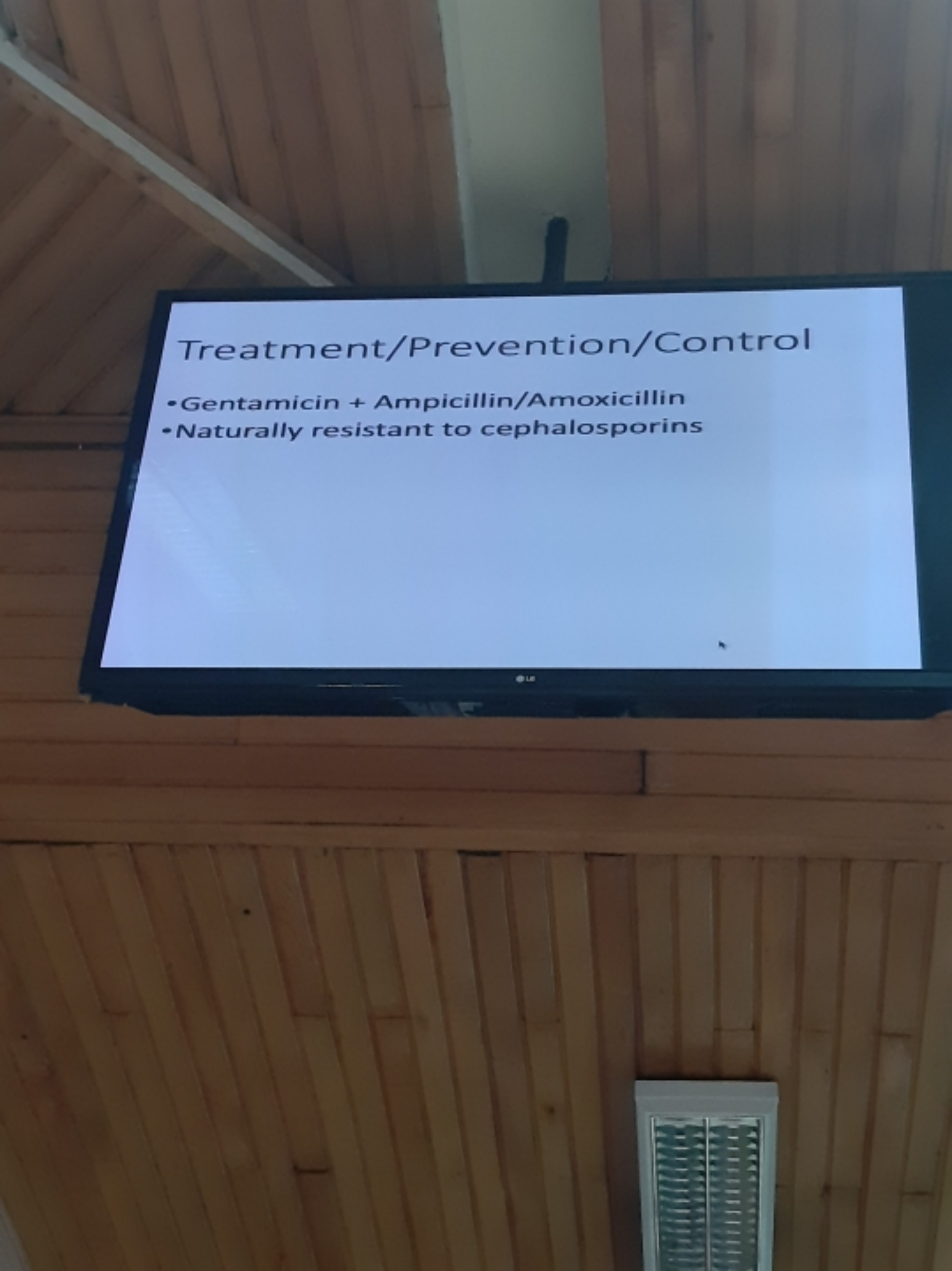
Late-onset disease occurs 2 to 3 weeks after birth(meningitis or meningoencephalitis with septicemia)

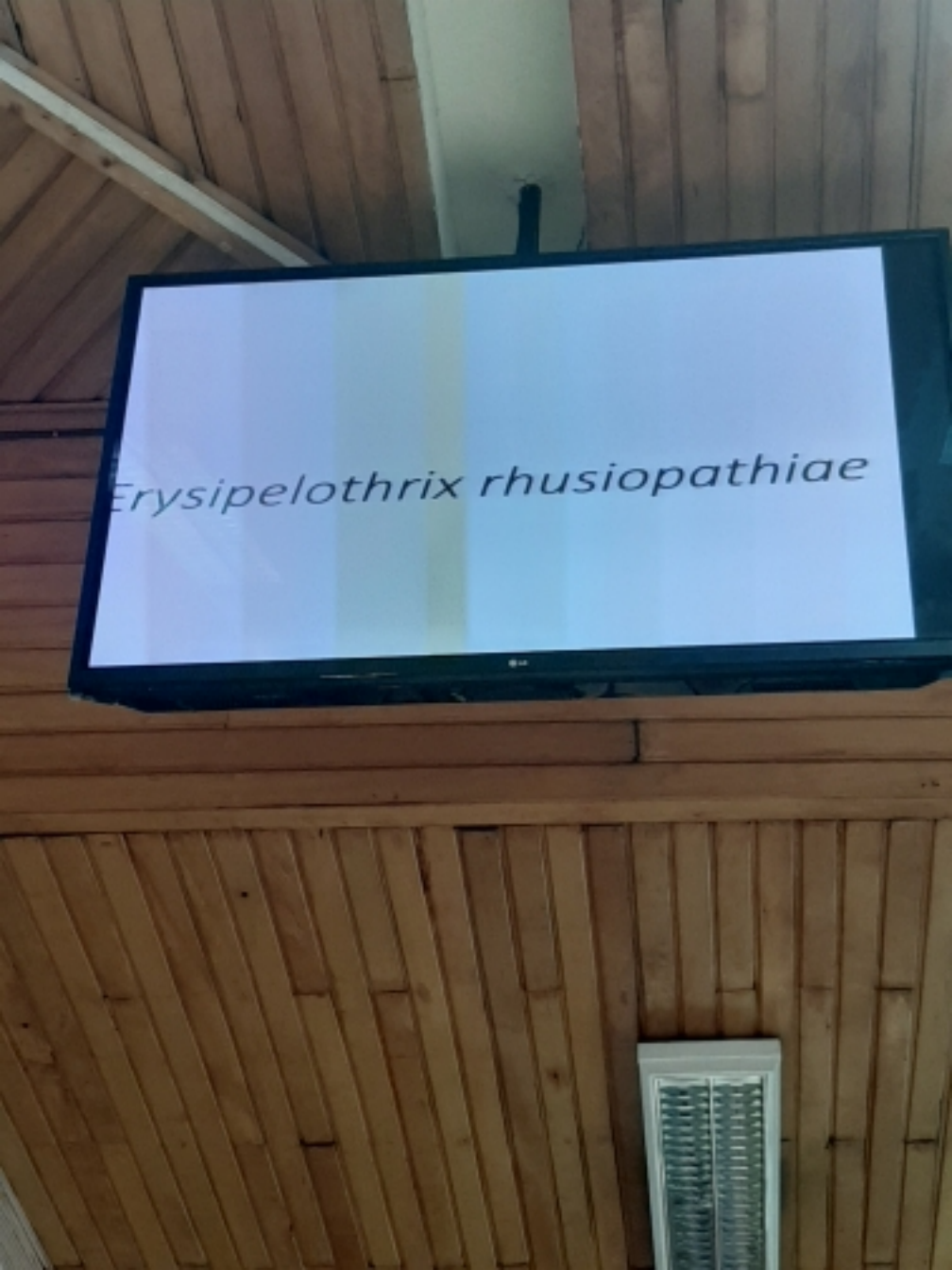
Laboratory diagnosis

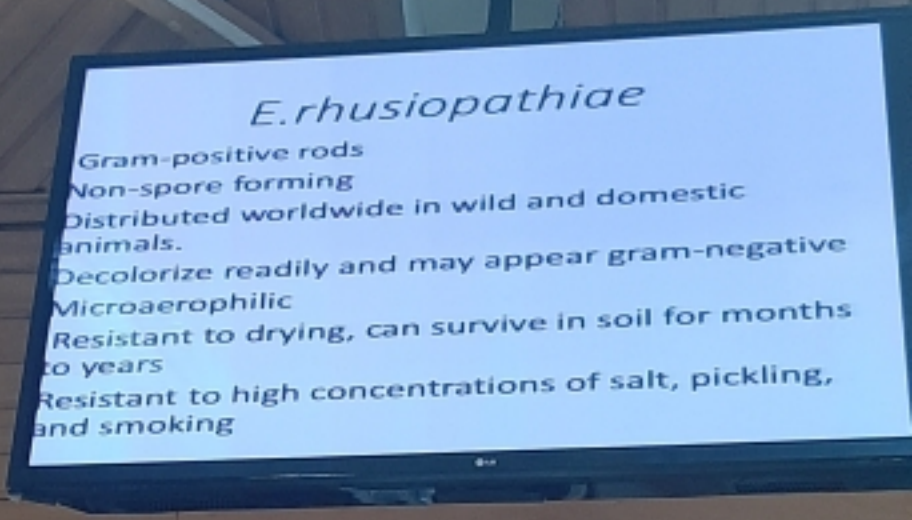
- Specimen: CSF, blood etc
- Gram positive coccobacilli

Culture

- **BA**- weakly haemolytic
- Optimal growth temperature is 30-35°C but growth occurs over a wide range
- Catalase positive
- Motile at room temperature
- Bile aesculin hydrolysis positive
- Positive CAMP


Treatment/Prevention/Control
•Gentamicin + Ampicillin/Amoxicillin
•Naturally resistant to cephalosporins


Erysipelothrix rhusiopathiae


E.rhusiopathiae
Gram-positive rods
Non-spore forming
Distributed worldwide in wild and domestic animals.
Decolorize readily and may appear gram-negative
Microaerophilic
Resistant to drying, can survive in soil for months to years
Resistant to high concentrations of salt, pickling, and smoking

Epidemiology

- Zoonotic and primarily occupational
- Butchers, meat processors, farmers, poultry workers, fish handlers, and veterinarians are at greatest risk.
- Cutaneous infections develop after the organism is inoculated **subcutaneously** through an abrasion or puncture wound during the handling of contaminated animal products or soil

Clinical disease

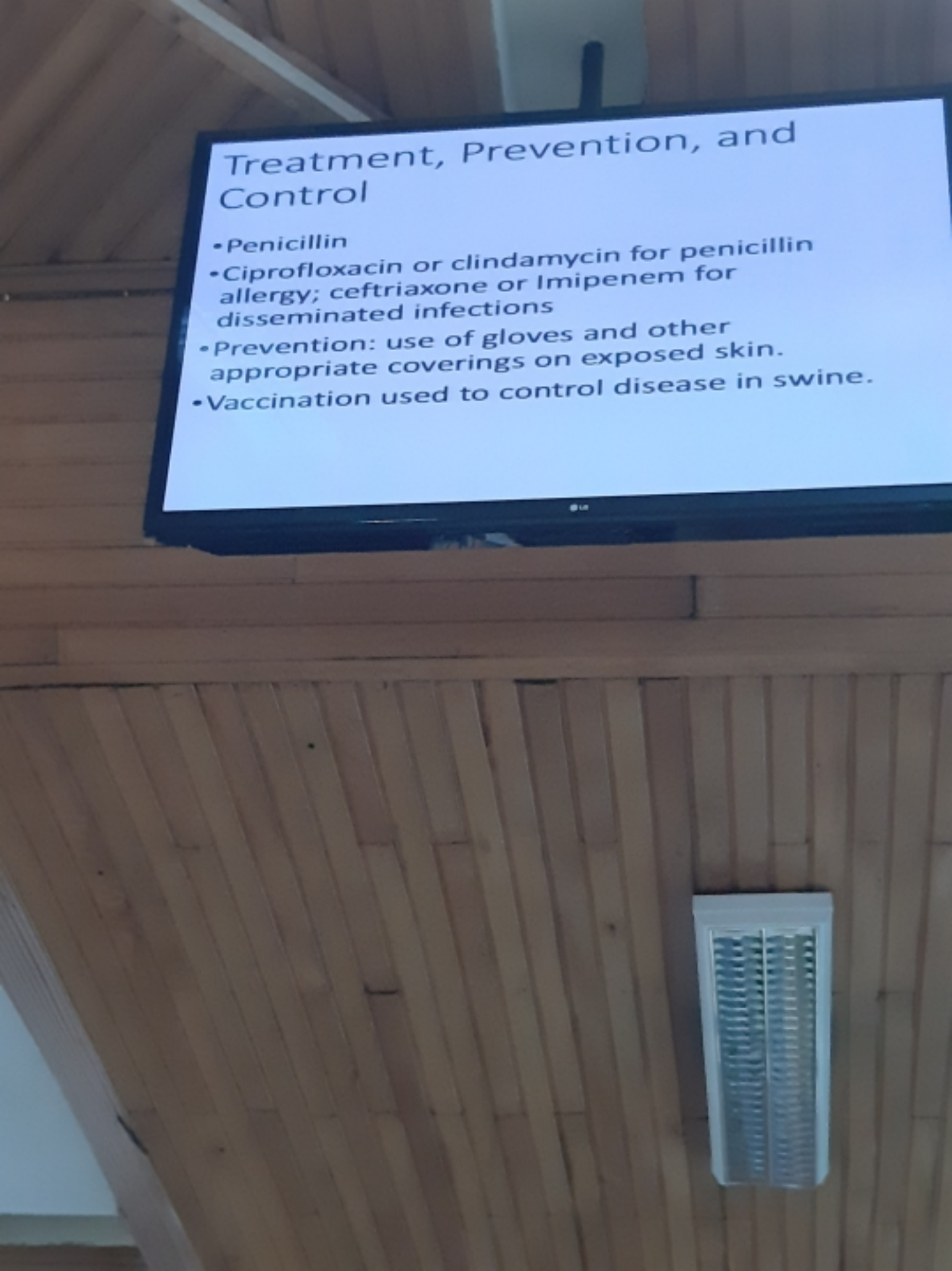
- *Three primary forms:*

*(1) a localized skin infection (**erysipeloid**)*

(2) generalized cutaneous disease

(3) Septicemia

Erysipeloid


Treatment, Prevention, and Control
•Penicillin
•Ciprofloxacin or clindamycin for penicillin allergy; ceftriaxone or Imipenem for disseminated infections
•Prevention: use of gloves and other appropriate coverings on exposed skin.
•Vaccination used to control disease in swine.