

# ***Neisseria, Moraxella, Kingella and Eikenella***

# Gram-Negative Cocci

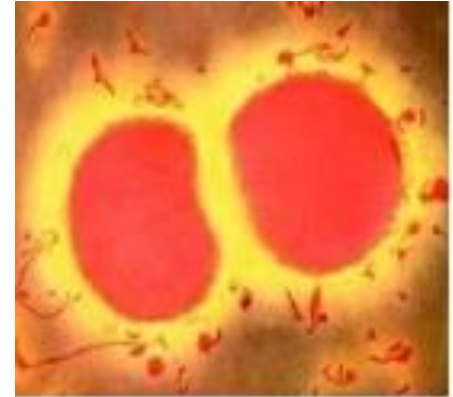
- The family *Neisseriaceae* comprises the genera *Neisseria*, *Moraxella*, *Kingella*, *Eikenella* and *Acinetobacter*.

Genus	Cellular morphology
<i>Neisseria</i>	GNC and GND
<i>Moraxella</i>	GNC, GND and GNCB
<i>Kingella</i>	GNCB
<i>Eikenella</i>	Pleomorphic GNCB
<i>Acinetobacter</i>	GNCB

# *Neisseria*

## Description

- Gram-negative, oval cocci
- Include two impo. human pathogen:
  - *N. gonorrhoeae* (**gonococcus**)
  - *N. meningitidis* (**meningococcus**)



# *Neisseria meningitidis*

## Classification

- By capsular polysaccharides
- By outer membrane proteins (porins) PorB and PorA

# *Neisseria meningitidis*

## Pathogenesis

- Natural habitat:
- Transmission:
- Factors predisposing the disease:
  - **Bacterial factors**
  - **Environmental factors**
  - **Host factors**

# *Neisseria meningitidis*

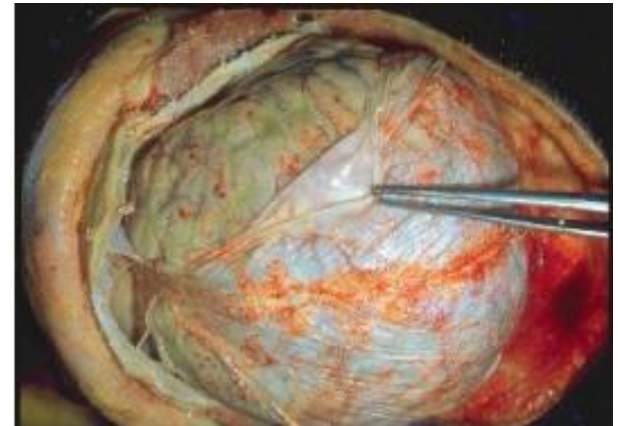
## Virulence factors

- Meningococcal endotoxin
- Capsule
- IgA protease
- Pili
- Outer Membrane Proteins (OMP)

# *Neisseria meningitidis*

## Clinical manifestation

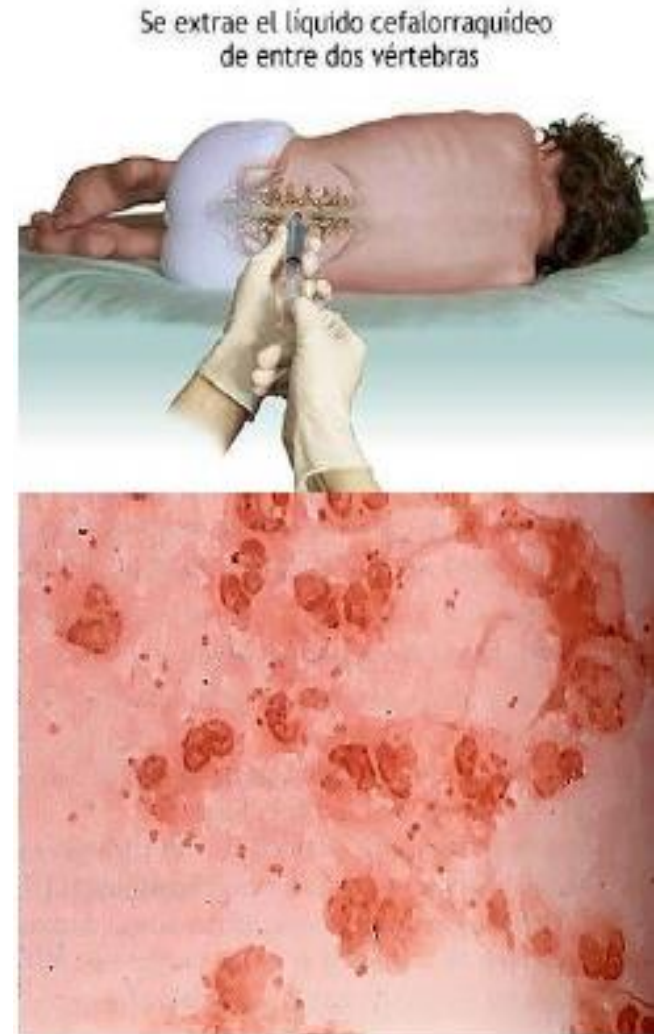
- Transient mild sore throat, Skin rash
- Bacteremia
- Meningococcal septicemia
- Meningitis
- Pneumonia
- Septic arthritis



## Symptoms of meningitis:

# CSF – Acute Bacterial Meningitis

- Specimen: CSF (lumbar puncture)
  - The appearance
  - Pressure
  - Protein level
  - Glucose level
  - White Blood Cell count
  - Gram stain

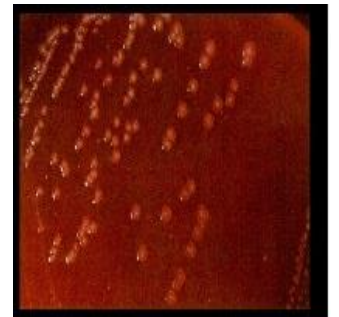
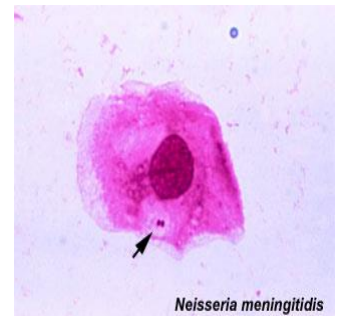
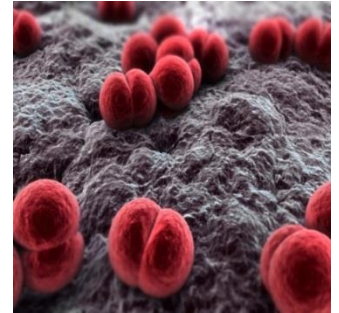




# *Neisseria meningitidis*

## Laboratory diagnosis

- Symptoms are suggestive
- Specimen:
- Cultures
- Incubation: overnight at 37°C, 5-10% CO<sub>2</sub>
- Oxidase test
- Catalase test
- Sugar utilization tests



# *Neisseria meningitidis*

- **Rapid identification**
  - Latex agglutination test



# *Neisseria meningitidis*

## Treatment

Intravenous penicillin, cefotaxime (Empiric ABC)

## Epidemiology

- Normal carrier
- The most common groups

## Control

- Chemoprophylaxis
- Vaccination



# *Neisseria gonorrhoeae*

## Classification

- Auxotyping
- Serotyping
- Ribotyping

## Transmission

Sexual transmitted disease (STD)

# *Neisseria gonorrhoeae*

## Virulence factors

- Capsule
- IgA protease
- Pili
- OMP

## Clinical manifestation

- In men
- In women

## Other Clinical manifestation



# *Neisseria gonorrhoeae*

## Laboratory diagnosis

- Symptoms are suggestive
- Cultures
- Incubation: overnight at 37°C, **5-7% CO<sub>2</sub>**, humidity
- Oxidase test
- Catalase test
- Sugar utilization tests

# *Neisseria gonorrhoeae*

## Treatment

- Penicillin-resistant organisms are called (PPNG); penicillinase producing *N. gonorrhoeae*

## Control

# Moraxella genus

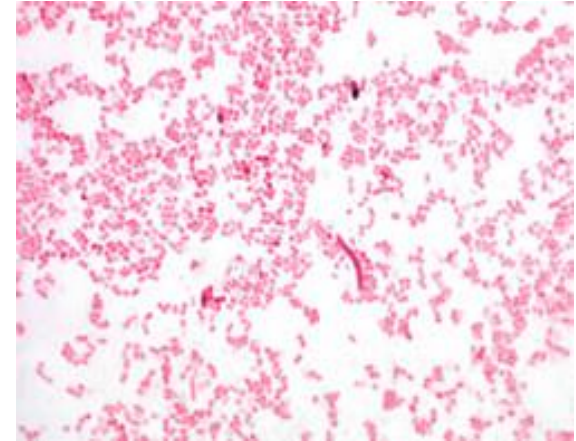
## Description

- Gram-negative short rods, coccobacilli
- *Moraxella catarrhalis* is diplococci

## Clinical manifestation

## Laboratory diagnosis

- Gram-negative, diplococci
- On blood agar and chocolate agar
- Oxidase test
- Catalase test
- DNase test
- Does it ferment sugar





# Kingella genus

## Description

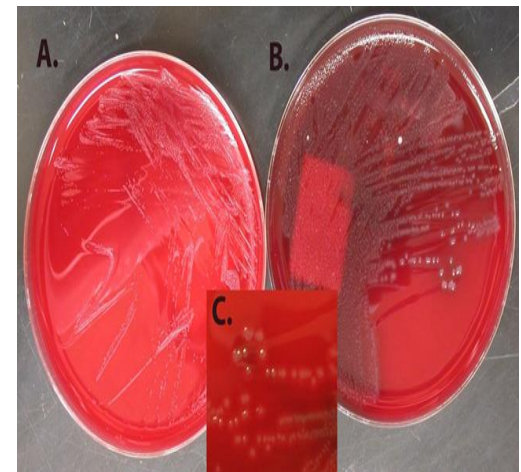
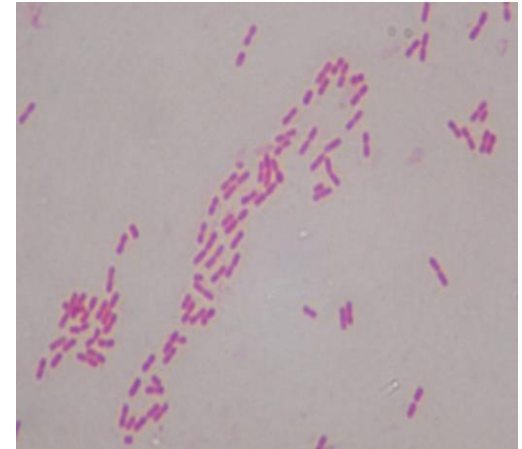
- Gram-negative short rods, coccobacilli

## Clinical manifestation

- *Kingella. Kingae*

## Laboratory diagnosis

- Gram-negative, coccobacilli
- Specimen
- On blood agar and chocolate agar
- Oxidase test
- Catalase test
- Does it ferment sugar



# Eikenella genus

## Description

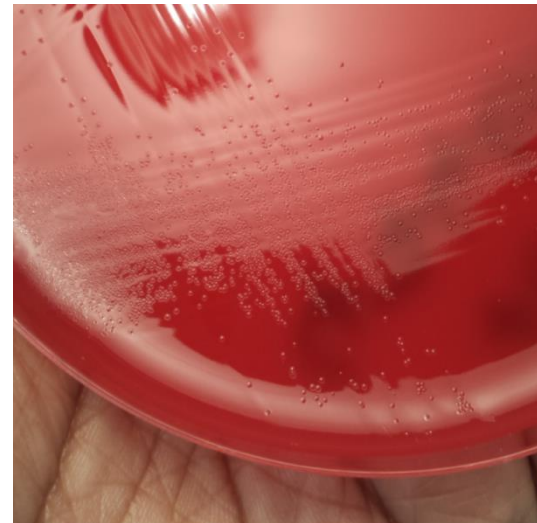
- Gram-negative short rods, coccobacilli
- *Eikenella corrodens*

## Clinical manifestation

# Eikenella genus

## Laboratory diagnosis

- On blood agar
- Oxidase test
- Catalase test
- Urease test
- Indole test
- Nitrate test



# Acinetobacter genus

## Description

- Gram-negative short rods, coccobacilli

## Clinical manifestation

- *Acinetobacter baumannii*
- nosocomial pneumonia

## Laboratory diagnosis

- On MacConkey agar
- Oxidase test
- Catalase test
- Does it ferment sugar



**Aerococcus**

# Aerococcus

## Description

- Gram-positive cocci
- *Aerococcus urinae*
- *Aerococcus viridans*
- Rarely reported pathogens

## Clinical manifestation

- *Aerococcus urinae*:

# Aerococcus

## Laboratory diagnosis

- Gram-positive cocci, in pairs, tetrads and clusters
- Aerobic
- Hemolytic activity on blood agar
- Catalase test
- Pyrrolidonyl aminopeptidase (PYR test)
- Hippurate hydrolysis test
- 16S rRNA gene sequencing analysis



# Aerococcus

## Treatment

- Penicillin, vancomycin
- *A. urinae* is resistant to sulfonamides

## Control

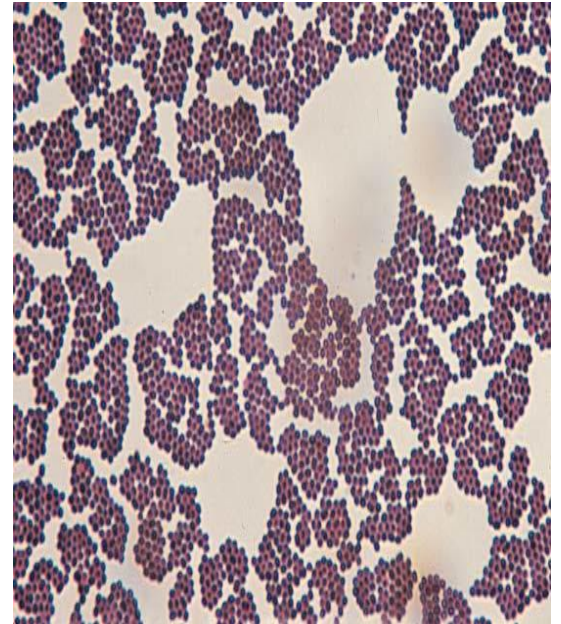
- Tracing, examination and treatment of contacts



**Peptococcus**

# Peptococcus

- Description
  - Gram-positive cocci
  - Anaerobic
- Clinical manifestation
  - *P. mag'nus*



# Peptococcus

## Laboratory diagnosis

- Gram-positive cocci
- Anaerobic
- Catalase test
- Oxidase test

## Treatment

- Penicillin, Clindamycin and Metronidazole

## Control

- Tracing, examination and treatment of contacts

**Veillionella**

# Veillonella

## Description

- Gram-negative cocci

## Clinical manifestation

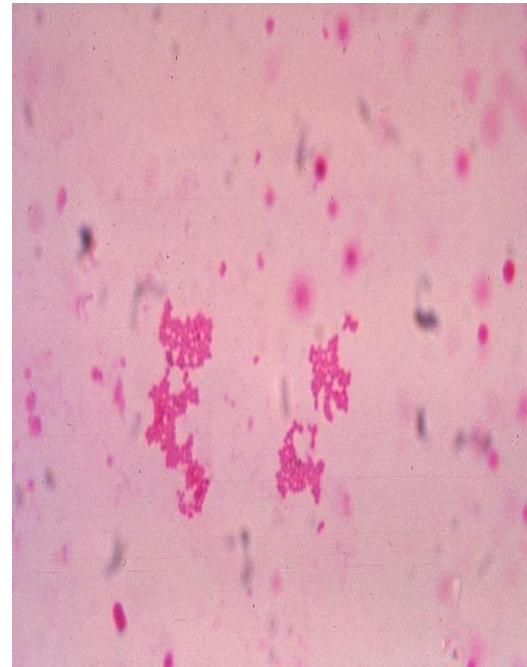
- *V. parvula*

## Laboratory diagnosis

- Gram-Negative cocci
- Strict Anaerobic
- Lactate fermenter

## Treatment

- Penicillin



**Gemella**

# Gemella

## Description

- Gram-positive cocci

## Clinical manifestation

- *Gemella morbillorum*

## Laboratory diagnosis

- Gram-positive cocci
- Facultative Anaerobic
- Catalase test

## Treatment

- Penicillin

