

## Helicobacter pylori

Causes chronic active gastritis, gastric & duodenal ulcer  
→ inflammation → more acid production & could develop adenocarcinoma.

Stomach can be **malignant**, but Duodenum are **benign**.

CagA gene → major H pylori virulence proteins.

**Asymptomatic** patients → **no** CagA gene.

### Epidemiology

50% of world are affected.

In USA high prevalence among

**African-American & Hispanic.**

**Contagious.**

**Fecal – oral rout or oral to oral route.**

### Lap

**Gram-negative**, spiral rods, motile by polar flagella.

**Culture:** on blood or chocolate agar in a moist microaerophilic atmosphere. For isolation from clinical specimens, use **campylobacter selective medium**. Grow after 3-7 days at 37°C.

**Biochemical reactions:** strongly **urease-positive**.

**Serology:** IgG and IgM to Cytotoxic Associated Gene A (**CagA**) & (VacA) for virulence strains.

### Pathophysiology

By flagella it drills into the mucoid lining → adhesion to epi cells → produce urease → break down of urea → CO<sub>2</sub> & ammonia → neutralizing acidity.

- ✓ Ammonia, proteases, vacA protein & phospholipases produced by H pylori → damage epithelial cells.
- ✓ H pylori ↑ host cell mutation → **Free radical** production.
- ✓ H pylori induces **TNF-α** & **IL-6** → cells mutation.

### Signs and symptoms

Epigastric pain → ↑ after meals.

Bloating & abdominal fullness.

Nausea & vomiting.

Loss of appetite & weight loss.

Haematemesis.

Melena.

Rarely, gastric or duodenal perforation

→ acute peritonitis.

### Diagnosis

**Non-invasive methods:**

Blood antibody test (IgG, IgM or IgA).

Stool antigen test.

Carbon urea breath test (C<sup>14</sup> or C<sup>13</sup>).

**Invasive methods (most reliable):**

Endoscopy → Histological examination or culture.

### Prevention

**Eradication.**

**Vaccination:**

**Dietary methods:** (eating broccoli, cabbage, honey, & drinking green tea).

**Proper sanitation.**

### Treatment

**Triple therapy (enough to know):**

1. One-week combination of Omeprazole, Clarithromycin and Tinidazole the rate of eradication was 95%-100%.
2. 10 days combination of Ranitidine Bismuth citrate, Amoxycillin and Clarithromycin with eradication rate of no more than 75%.
3. 10 days combination of Ranitidine Bismuth citrate, Clarithromycin and metronidazole with an eradication rate of 90%.
4. One-week combination of Omeprazole, Amoxycillin and metronidazole the rate of eradication was 96%-( very cost effective).