PLAGUES IN MAN
200 YEARS OF CHOLERA

I. HISTORY

A  EPIDEMIC IN ASIA SINCE THE 18TH CENTURY
1. SEVERAL PANDEMICS "OUT OF ASIA", FIRST IN 1817
2. UNTREATED WATER (FOOD)
3. JOHN SNOW AND THE LONDON EPIDEMIC - 1832, 1849
4. INDIA/ENGLAND
   a. EPIDEMICS GREW WORSE IN INDIA/ASIA
   b. EPIDEMIS BECAME Milder IN ENGLAND/WESTERN EUROPE
      AND NORTH AMERICA
5. REFERRED TO AS "DISEASE OF CIVILIZATION"
   a. WAS ENDEMIC IN INDIA/ASIA FOR CENTURIES
   b. BECAME EPIDEMIC AND THEN PANDEMIC AFTER 1800 WHEN
      POPULATION REACHED A "THRESHOLD"
   c. LIFE EXPECTANCY IN INDIA IN 1820 WAS ABOUT 20
      YEARS - ACTUALLY DECLINED BY 1880.
   d. A DISEASE OF THE POOR
6. IN 1884 KOCH ISOLATED THE "COMMA BACILLUS"
   a. THE GERM THEORY OF DISEASE
   b. JOHN SNOW'S WRITINGS BELIEVED
   c. DRINKING WATER THE MAIN PROBLEM
7. RECENT EPIDEMIC IN PERU - 1991 - PART OF THE "SEVENTH
   PANDEMIC"

B. THE AGENT - VIBRIO CHOLERA
1. GRAM NEGATIVE, γ-PROTEOBACTERIUM
2. PROPERTIES LIKE E. COLI
   a. GROWS RAPIDLY
   b. FACULTATIVE, CHEMOHETEROTROPH
   c. PRODUCES A POWERFUL TOXIN
   d. MOTILE WITH POLAR FLAGELLUM
3. MANY STRAINS - V. cholera 0:1 (EL TOR)

C. PATHOGENESIS
1. COLONIZES SMALL INTESTINE (NEED HIGH DOSE)
2. PRODUCES POWERFUL ENTEROTOXIN - THE CHOLERA TOXIN
3. TOXIN AFFECTS THE LARGE INTESTINE
   a. TOXIN Binds TO EPITHELIAL CELLS OF COLON
   b. A BIPARTITE TOXIN
   c. MODE OF ACTION IS KNOWN
4. CAUSES SEVERE DIARRHEA (CRAMPS AND VOMITING)
   a. "RICE WATER" STOOLS
   b. RAPID DEHYDRATION - BLUE, WRINKLY SKIN
   c. PAINFUL CRAMPS
   d. CARDIAC ARREST

D. PREVENTION AND TREATMENT
1. ANTIBIOTICS WORK BUT ARE OF LITTLE USE
   a. TETRACYCLINES ARE PREFERRED
   b. USUALLY TOO LATE FOR CHEMOTHERAPY
2. ELECTROLITES AND WATER ARE TREATMENT
   a. ORALLY AND IV IF NEEDED
   b. CDC RECOMMENDS SPECIAL TREATMENT
3. SAFE DRINKING WATER
4. INSPECTION OF SHELLFISH
   AND MONITORING HARVEST AREAS