


2014

 جامعة طنطا كلية الصيدلة	Tanta University Faculty Of Pharmacy Department Of Microbiology			
	Examination For (Third Year) Pharmacy Students			
	Course Title: Public Health			Course Code:
Date	Dd/mm/yy 11/1/2014	Term : First	Total Assessment Marks: 150 Total pages: 6	Time Allowed: 2 Hours

ملاحظات هامة :
 (1) تأكد من وجود (6) صفحة بالكراسة .
 (2) عند اكتشاف أي خطأ في ترتيب الأوراق يجب الرجوع إلى أساتذ المادة.
 (3) امتحان الشهر لجميع الطلاب بعد التحرير مباشرة.

I) Complete each of the followings (94 Marks, 74 Min.)

- 1) The major characteristics of public health are
 - a-It deals with population-level, rather than individual-level health issues.
 - b-It deals with preventive rather than treatment a disease through surveillance of cases and the promotion of healthy behaviors.
- 2) The goal of palliative medicine is to improve quality of life for both patient and family
- 3) Virulence of a causative agent is measured by
 - a- the proportions of total cases (diseased) that are sever.
 - b- case fatality rate (CFR) If the disease is fatal
- 4) Determining the tertiary level of preventive medicine helps to define the methods of reducing negative impact of extant disease by restoring function and reducing disease-related complications
- 5) Types of chronic carriers are -----
 - a-persistent, e.g., hepatitis B,C
 - b- latent, e.g., HSV, VZV
 - c- active e.g., hepatitis .CMV CMV HSV, VZV
 N.B., asymptomatic carriers are present in some diseases e.g., hepatitis
- 6) The treponemal antigen tests for diagnosis of syphilis are
 - a- TPHA (Treponema pallidum hemagglutination) test
 - b- FT-ABS (fluorescent treponemal anti body absorption) test.
- 7) The efficacy of tetracyclines as a control measure of sexually transmitted diseases is tetracycline is effective against ,serotypes D- K of *C. trachomatis*, *C.trachomatis* biovar LGV , *M. hominis* (all aer not affected bu bta- lactams) and against *Neisseria gonorrhoea*(developed resistance to pinicillins) and also against *ureaplasma*(in large number of cases)
- 8) Rotaviruses diarrhea is more common in young children than newborns due to breast feeding which is highly protective, as allowing continuous presence of IgA .
 Vaccine induces immunity including IgA production in lumen reduces the severity of disease but not prevent re-infection due to short duration and different types or serotypes.
- 9) The roles of external environment in the epidemiological cycle of disease are is the sum total of influences that are not part of the host and comprises physical, climatologic, biologic, social, and economic components, i.e., all the predisposing factors of spread of the diseases
- 10) Control measures include the release of cases having satisfactory general condition such as
 - a- pulmonary tuberculosis
 - b- viral B hepatitis
 - c- viral C hepatitis

11) Occupational arthropod borne zoonotic diseases include

- a- Listeriosis b- leptospirosis c- Brucellosis + plague/ Anthrax

12) General preventive measures include

- a- sanitary environment b- Health education c-Health promotion

13) Contact diseases of undamaged surface include

- a- scabies, taenia, and herpes simplex. b- conjunctivitis: trachoma, varicella
c- zoster, leptospirosis (+ Weil's syndrome)

14) Two types of mycotoxicosis are

- a-Turkey X disease and the causative agents *Aspergillus flavus* (it produces aflatoxins)
b- ergotism and the causative agents *Claviceps purpurea* (it produces ergot Alkaloids)

15) Types of human antisera are

- a- normal immunoglobulin which are prepared from pooled human blood, in endemic areas such as measles, mumps, and rubella.

b-specific immunoglobulin (hyper immune gamma globulin or "anti-name of disease) which are prepared from plasma of convalescents (occasionally), or actively immunized donors (usually) such as antipertussis.

16) In Egypt, pregnant can be actively immunized by

- a-Tetanus toxoid and its effectiveness is Almost absolutely protective for a time of 3-5 years
b- (MMR) vaccine and its effectiveness is Almost absolutely protective for a time of log life
+ Genetically engineered vaccines e.g. HBs Ag-vaccine and its effectiveness is highly protective for a time of 10 years

17) The incubation period of is

- a- Yersenia pistils: 10 days
b- hepatitis A: around 4 weeks
c- Treponema pallidum: week to 3 months, an average of 3 weeks
d- influenza A viruses: 1 -3 days

18) Severity of infection with referred to

- a- RSV Infections: due to IgE- secretion and direct cytopathic effect severity especially increases in infants as maternal antibody passed to the infant may react with the virus, forming immune complexes, and damage the respiratory tract cells.
b- measles: usually pneumonia due to direct respiratory epithelial cells destruction, impair cell immunity induce secondary bacterial infections

19) Efficacy of antisera as control measures of is

- a- measles: within few days of exposure is sero-prevention. Some days later is sero attenuation, as the virus begins to invade lymphatic cells, and so the occurrence of disease cannot be prevented, but attenuated, due to partial infiltration of gG. protective period is usually for about 6 months.
b- poliomyelitis: within few days of exposure is sero-prevention. Some days later is non effective as the virus begins to invade nerve cells, and so the occurrence of disease cannot be prevented. the IgG cannot invade the CNS
c- varicella: useful as prophylaxis for susceptible new bornes and infants to varicella and to disseminated zoster in immuno- compromised people or sero negatives pregnant women.

20) An infection that starts as an epidemic can either die out or reach the endemic steady state depending on the

- a- infectivity of the organism rather than the virulence of agent
b- duration of infectivity of affected patients (and infectiousness), and
c- number of susceptible people in the population whom contact with patients.

21) Accurate diagnosis of is based on:

a- AIDS: - DNA probing that hybridizes with viral genes and PCR technique.

- Serology by ELISA and blood that is positive by ELISA is then tested by western blot

b- mycoplasma- respiratory tract infections: culture of throat washings or expectorated sputum. The colony has a typical fried-egg. Microscopically: mycoplasma has a variety of form, a spherical or donut shape having tails or projections. Blood smear: red blood cells looking like little doorknobs which often make the red blood cell appear like a water mine DNA probes and PCR are rapid for detection of *M. pneumoniae* in clinical specimens.

c- CMVs infections: Histological staining of inclusion bodies (have an oval owl's eye shape) in giant cells in urine and in tissue. A 4-fold or greater rise in antibodies titer is also diagnostic for active cases, both primary and reactive. PCR for CMV in tissue or body fluid, and amniotic fluid are also very useful

d- Tinea in scalp hair: cultivation on Sabouroud's dextrose agar at 25°C, the fungi elements are determined primarily on conidia that are produced caused by the dermatophytes; microsporum has branched septet hyphae producing thick walled singlet macroconedia (mainly) and microconedia(rare) and trichophyton pencil shaped branched mycelium producing microconedia (mainly) and macroconedia(rare)

22) The complications of are

a- mumps: softening and shrinkage of testes that may affect spermatozoal counts when bilateral and deafness. Congenital anomalies in new borne may be developed.

b- influenza A: secondary bacterial pneumonia is a common complication during influenza outbreaks and is responsible for many of the resulting deaths.

23) Specific clinical findings of are

a- common cold: increased mucous secretions, watery eyes, and sneezing.

b- human papillomaviruses (HPVs) Skin and plantar warts, genital and anal warts
-cancer of the uterine, cervix by certain serotypes

c- *Ch. trachomatis* (LGV) infections: The second stage where marked inflammation and swelling of the lymph nodes draining the site of initial infection. painful inguinal nodes are and fluctuant buboes that gradually enlarge. In women, proctitis is common because of lymphatic spread from the cervix or vagina.

In men, proctitis develops after anal intercourse or by lymphatic spread from the urethra. Untreated LGV maybe developed to genital elephantiasis.

d- hemorrhagic dengue fever: is potentially a deadly complication of dengue. It is an immuno complex of infection of a person who has already has immunity to one serotype of 4 dengue virus with a virus of another serotype. Disease is more severe in children as maternal antibody in infants may result in DHF even from a first infection. DHF may resemble classical dengue in the first few days (2 to 7 days) of illness (high-grade fever, headache, myalgia, arthralgia, and often a maculo-papular rash, change in taste sensation). Then the patient becomes restless and lethargic before development of subcutaneous hemorrhage e.g. in the upper arms (due to increases vascular permeability)

24) The mode(s) of transmission of is/are

a- polioviruses: Direct droplet infection via respiratory tract infection is more important in developed countries where the environment is clean and sanitary and outbreaks may occasionally occur (e.g. milk – borne)

Both oral and respiratory modes of infection occur in developing countries where the disease is endemic.

b- Relapsing fever:

- **Louse-borne relapsing fever:** *Borrelia recurrentis* gains access to invade the blood stream after crushing the louse or scratching the area while louse is feeding on uninfected human.

- **Tick born relapsing fever:** soft tick vector, transmits *Borrelia duttoni*, *B. hermsii*, and *B. parkerii*. to humans through their saliva while feeding during biting and in faeces.

c- psittacosis: Transmission from birds to humans are usually by inhalation of dried bird excrement. Person-to- person transmission is rare Transmission has also been documented after handling of infected tissue or plumage.

d- adenoviruses: aerosol droplet, the fecal-oral route (both are most common modes of transmission among young children and their families), and direct inoculation of conjunctivas by fingers

4

II) What are (21 Marks, 18 Min.)

1) The specific preventive and control measures of

a- rotaviruses: diarrhea: Rotavirus A vaccines are safe and effective in children at risk groups in under- developing countries. The WHO (2009) recommended that rotavirus vaccination should be included in all national immunization programmers to provide coverage of 80 to 100%.

b- rubella preventive measure: MMR which develops a high level of herd immunity. Immunity is solid, 95%, and lifelong.

Seroprophylaxis is recommended for susceptible pregnant (preventive measure) and contacts (control measure) within few days of exposure is sero-prevention. Some days later is sero attenuation,

c- influenza A: major means of preventing outbreaks is through live attenuated vaccine (intranasal), stimulates both local and serum antibodies and killed vaccines (two S.C. doses, 4-8 weeks apart, stimulates serum antibody. These types of vaccines are moderately effective about 70%. This gives protection for a year

d- trachoma: case -finding and chemotherapy (Tetracycline or erythromycin), disinfection of articles and fomites are very impotent as a control. In hyper endemic areas, trachoma campaign is controlled by mass case - finding and treatment, local chemoprophylaxis for individuals or groups at risk.

2) The dose schedule of rabies vaccines when used as preventive measures, and its protective period(s).

HDTCV is given in three doses, deep S. C. or deep I.M: the first two doses 4-6 weeks apart, and the third 6 months later. Serum is then tested for antibodies, so as to give more dose(s) if necessary. Vaccine gives protection for about 3 years.

3) Epidemiology of

a- tinea unguinum (dermatophytes infection of nails) it caused by the dermatophytes; **trichophytes** which are transmitted from human to human and from animal to human (i.e., **zoophilic and it is zoonoses**) and **epidermatophytes** Only its transmission is common among human (i.e., **anthropophilic**). Once cause chronic infection and may be difficult to cure

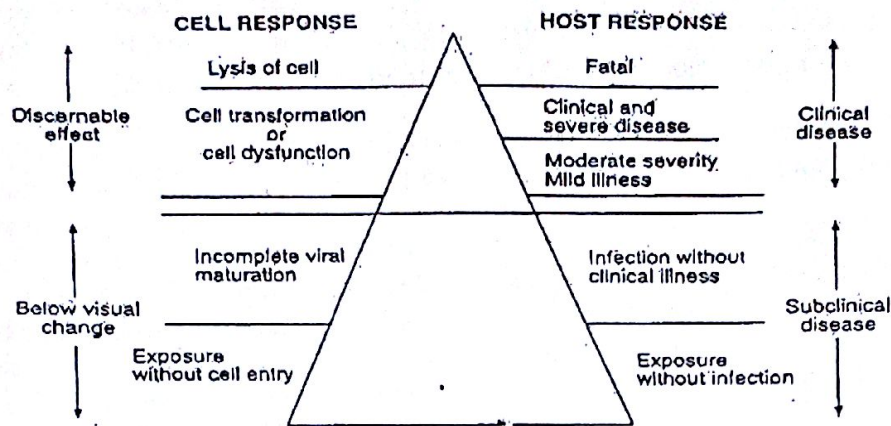
b- listeriosis

Listeriosis is caused by Listeria monocytogenes. It is found in soil, stream water, sewage, plants, and food. *Listeria* is found in uncooked meats, uncooked vegetables, unpasteurized milk. It is able to grow in temperatures ranging from 4 -37°C. Listeriosis can be quite common outbreaks in farm and wild animals including cows, goats, horses, mouse, rat, dog, fox and birds

Listeria is transmitted to human by ingestion (especially in uncooked meats, uncooked vegetables and unpasteurized milk), inhalation and sexually and transplacental. However, in human, it is relatively rare, i.e., has low infectivity. It is

more common in rural than urban areas and occurs primarily in newborn infants, pregnant, elderly patients, in immunosuppressed patients or those with cancer.

III) Compare between? (16 Marks, 14 Min.)
 1) The cell response and host response, in respect to iceberg concept of disease.



2) Chancre and chancroid.

Chancre is primary syphilis, a characteristic ulcer located on **the external genitals** (gland penis, vulva) at the inoculation site of *Tr. pallidum*. It begins slowly growing, hard, pale brownish – red, usually painless nodule. Then it superficially erodes to create a clean-based, shallow ulceration on the surface of the slightly elevated papule. When the lesion is on a mucous surface and the part is not kept clean, there may be more extensive ulceration and suppurative exudation

Chancroid is characterized by **genial ulcers** usually **painful and multiple**, and **tender inguinal adenitis**, which may progress to burst bubo formation with suppuration if left untreated and it is caused by *Hemophilus ducreyi*

3) Specific signs of shingle and varicella. .

a- shingle: **painful vesicles along the course of a sensory nerve** of the head or trunk are the picture. The pain lasts for weeks

b- in varicella: rashes are **polymorphic**, appears in crops mainly on the trunk and spreads to the head and extremities It disappeared without leaving scars

4) Weil's syndrome and canicola fever.

Weil's syndrome is caused by *L. icterohaemorrhagiae*. Infection **acquired from rats**. This serotype is also found in other animal hosts, including dogs, pigs and foxes, and the syndrome may be caused by other serotypes.

The prodromal phase is non-specific clinical signs in different body systems including: GIT, RT and CNS disorders, Cardiac arrhythmias, conjunctival hemorrhage but is followed by persistent fever plus liver and renal dysfunctions . **Liver failure** may thereafter.

Canicola fever infection is caused by *L. canicola* is usually characterized mainly by meningitis, general sings of prodromal phase of leptospirosis and may be and accompanied by renal and hepatic dysfunctions.

IV) Explain how? (19 Marks, 14 Min.)

1) Could you measure of disease frequency in a community

a- Incidence rate: measures new cases occur in a population during a specified period.

When population at risk is roughly constant, incidence rate is measured as:

Number of new cases / Population at risk x time during which cases were ascertained.

For example, the incidence of disease X during 2007, in Upper Egypt was 10/100 000/ year

However, Incidence rate is usually measured as

Number of new cases of a specific disease during a given time interval / Estimated mid interval population at risk. i.e., expressed as ratios

It is a statement of probability and can be used to detect etiologic factors

b. Prevalence: is the proportion (%) of a population that are cases at a specific point in time or a given time interval (i.e. there are two types of prevalence: point prevalence. and period prevalence).

The prevalence rate is expressed as:

Number of current cases [old (i.e., people who contracted disease before time period began and who still have the disease) and new] of a specific disease during a specified time period

$$\frac{\text{Number of current cases [old (i.e., people who contracted disease before time period began and who still have the disease) and new] of a specific disease during a specified time period}}{\text{Estimated mid interval population at risk}} \times 100$$

Prevalence is used in relatively stable conditions, and it is unsuitable for acute disorders. The point prevalence is based on a single examination. For example anemia in a large sample of primary school children in Egypt surveyed during e.g. 2007 was approximately 3%, the symptom being defined by response to a standard questionnaire completed by the children's parents. If repeated or continuous assessments of the same individuals are possible, a better measure is the period prevalence which defined as the proportion of a population that is cases at any time within a stated period. For example prevalence of low back pain in a sample of Egyptian women aged 30-39 was 22 % in 2009.

2) Could you define the stages of chronic hepatitis B

Stages of chronic hepatitis B differ in clinical manifestations, liver enzymes levels and serological markers

a- asymptomatic form: clinically; well, liver enzymes levels ; within normal and serological markers: +HBsAg, anti HBs-Ag > anti HBc-Ag > anti HBe-Ag

b - chronic persistent form: clinically; well, liver enzymes levels ; higher than normal (not greater than two fold) and serological markers: +HBsAg, anti HBs-Ag > anti HBc-Ag > anti HBe-Ag but all are relatively higher than in asymptomatic state.

c - Chronic active form: clinically; active , acute signs, liver enzymes levels ; 4fold or more) and serological markers: +HBsAg, anti HBc-Ag > anti HBs-Ag > anti HBe- Ag and all are at high levels. anti HBc-Ag > anti HBs-Ag because a large proportion of anti HBc-Ag is masked by the greater release of HBsAg

3) Developed immunity does not prevent re-attacks with

a- HSVs: Raised IgG prevents re-infection but does not prevent re-activation of latent viruses in regional ganglia

b- parainfluenza : Four serotypes, with no cross antigenicity, and the raised serum Ab is non protective(low infiltration), viremia does not occur and short duration immunity of IgG. The developed IgA has short protective duration and no vaccine

c- venereal syphilis: *Tr. Pallidum* develops infection immunity. Recovery followed by gradual decreasing of antibodies, and thus individual becomes re-susceptible to reinfection.