HUMAN HEALTH AND DISEASE DRUGS AND ALCOHOL ABUSE

INFECTIONS DISEASES IN HUMAN (ALCOHOLISM AND THEIR EFFECTS & DEALCOHOLISM) COMMON DISEASES IN HUMAN

A wide range of organisms belonging to bacteria, viruses, fungi, protozoans, helminths, etc., could cause diseases in man. Such disease causing organisms are called pathogens. Most parasites are therefore pathogens as they cause harm to the host by living in (or on) them. The pathogens can enter our body by various means. multiply and interfere with normal vital activities. resulting in morphological and functional damage. Pathogens have to adapt to life within the environment of the host. For example, the pathogens that enter the gut must know a way of surviving in the stomach at low pH and resisting the various digestive enzymes

Disease (s)	Pathogens	Symptoms
(A) Bacterial diseases 1. Tuberculosis	Mycobacterium tuberculosis Mode of injection - Droplet injection	Chronic cough, fever, weakness, bloody sputum, breathlessness treatment - DOTS (Direct observation treatment short course) Investigation - Mantoux test
2. Diphtheria	Corynebacterium diphtheriae	High grade fever, difficulty in breathing (Investigation - Schick test)
3. Whooping cough (Pertussis) (100 days cough)	Bordetella pertussis	Presistent large bouts of cough
4. Cholera	Vibrio cholerae	Diarrhoea, dehydration, vomiting
5. Pneumonia	Streptococcus pneumoniae (Earlier Diplococcus pneumoniae)	Infection in lungs, difficulty in breathing, high fever

COMMON HUMAN DISEASES

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6. Tetanus (Lock jaw)	Clostridium tetani	Sustained contraction of body muscles, spasm, lock jaw, unconsciousness, opisthotonus, Risus Sardonicus - Streching of facial muscles
7. Leprosy or Hanson's disease	Mycobacterium leprae	Patches on skin, ulcer and nodules formation in skin and nerves, deformities, ulceration and wasting of fingers and toes
8. Typhoid fever	Salmonella typhi	High Fever, loss of appetite, intestinal ulcers, bradycardia and perforation Detect by widal test
9. Plague (Black death)	Yersinia pestis (Earlier name-Pasteurella pestis)	High fever, headache, enlargement of axillary lymph nodes, unconsciousness

(B) Viral diseases 1. Polio or poliomyelitis	Polio virus (Group-Picorna virus)	Fever, headache, paralysis
2. Influenza	Orthomyxovirus	Sudden fever after headache, nasal discharge
3. Measles	Paramyxovirus	High grade fever, white-brown patches on body and blisters
4. Chicken pox	Pox virus (Varicella-herpes virus)	Rashes on body with fever (Dew drop like appearance of vesicle)
5. Mumps	Para myxovirus	Painful swelling in parotid glad
6. Dengue fever or Break bone fever	(Arbovirus (Flavi)) Vector-Aedes agypti	Fever, pain in muscles and joints haemorrhagic condition in body (Torniquet test)
7. Chikun gunya	Togavirus (Flavi)	Fever, joint pain, arthritis
8. Rabies (hydrophobia)	Rabdo virus or street virus (Vector-Rabbit, dog, cat and wild animals)	Affect CNS - Madness, hydrophobia due to laryngeal spasm and 100% death after symptoms. For prevention - Human diploid cell culture vaccine.

(C) Protozoan disaasas		
1. Malaria	Plasmodium sps.	High fever with chill of intermittent periodicity, pain in joints
2. Amoebiasis	Entamoeba histolytica	Intestinal spasm, dysentry
3. Diarrhoea	Giardia intestinalis	Vomiting, loose motions
4. African sleeping sickness	Trypanosoma gambiens	Patient feels sleepy, nervous system impairment
5. Kala azar	Leishmania donovani	High fever associated with enlargement of spleen and liver
(D) Helminth diseases		
1. Ascariasis	Ascaris lumbricoides	Abdominal spasm, insomnia, vomiting, loose motions, restlessness

Hepatitis types (A, B, C, D, E affect liver) Hepatitis A (epidemic jaundice or infectious hepatitis) (Most common cause of Jaundice)	• HAV (Entero virus type-72) – SS RNA 2 – 6 weaks Hexagonal body Single strand R.N.A.	Contaminated food and water through foecooral route or intestinal route.	Fever, vomiting, Hepatomegaly jaundice (increase) billirubin in blood due to liver infection. Liver does not change billirubin. This billirubin accumulates in various body parts so body become yellowish and also excrete billirubin in urine. Dark urine, whitish stool P -hepatitis. A vaccine T/t – Bed rest less protein & more carbohydrate diet γ –globulin, interferon

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Hepatitis B Serum hepatitis (STD)	HBV – Double stranded circular DNA size = 42 nm 2 to 6 months Outer protein coat (Surface envelop) (Australian HBSAg) Hexagonal NA polymerase	 Sexual contact, blood contact, mother to child by placenta called vertical transmis- sion (Liver.) (More infectious than AIDS) 	Fever, vomiting, jaundice, dark urine whitish stool Investigation– Serum billirubin SGPT (Serum glutamic pyruvic transminase test) 5 – 40 I.U. ELISA test
Hepatitis – C (Non–A, Non–B hepatitis	HCV SS R.N.A.	By Blood Transfusion (90%) Post Blood transfusion Hepatitis)	
Hepatitis – E Similar to Hepatitis A	HEV (R.N.A.)	Water born disease	
Hepatitis – D or Delta Hepatitis	Hepatitis B (Carrier state) SS RNA		Prophylaxis – Hepatitis B Vaccine (0, 1, 6 months) Engerix – B Shenvac – B Enivac – B

Some STDs, their Pathogens and Symptoms			
Disease (s)	Pathogens	Symptoms	
 (A) Bacterial 1. Syphilis or French pox (Inclubation Period) – Aprox 21 days 	Treponema pallidum	Round elevated ulcers on genital organs Investigation - VDRL test (Veneral disease research laboratory test)	
2. Gonorrhoea (2 to 5 days)	Neisseria gonorrhoeae	Infection of urethra in male, discharge of white thick fluid from urethra, pain during urination In females– Infection in cervix, pain and burning during micturition	
3. Vaginitis	Gardnerella vaginalis	Grayish–white discharge from vagina	
4. Chancroid	Haemophilus ducreyi	Foul smelling discharge and ulcers	
5. Chlamydiasis	Chlamydia trachomatis	Recurrent pain and infection in urinary tract	

Note: Some other bacterial diseases-

Tuberculosis, Whooping cough (Pertussis), Cholera, Leprosy

Note : Some other viral diseases –

Polio or poliomyelitis, Influenza, Measles, Chicken pox, Mumps, Rabies,

SARS (Severe Acute Respiratory Syndrome), Swine flu

ALCOHOL AND ALCOHOLISM

- Ethyl alcohol is consumed as fermented beverages with low content of alcohol(beer, wine) and as distilled beverages with a relatively high alcohol percentage (Brandy, Rum, Whisky, Gin).
- This alcohol is rapidly absorbed from the wall of stomach and enters the blood stream within minutes of ingestion.
- In the llver alcohol is converted into a more toxic substance acetaldehyde.

Effects of alcohol drinking -

- (1) Lowering of blood sugar level (Hypoglycemia).
- (2) Alcohol drinking affects the cerebellum part of brain so control and coordination of the body affected.
- (3) Effects on liver The liver is the organ most affected by alcohol. Excess alcohol in the blood causes increase in the synthesis of fat which is deposited in the liver cell and bile ducts. This results in the "Fatty liver syndrome" The further stages of this are "Liver cirrhosis" and "Billiary cirrhosis diseases". Liver become fibrous.
- (4) Amnesia Loss of memory
- (5) **Gastritis -** It causes the inflammation in the wall of stomach. In chronic cases the gastric ulcers usually develop.
- (6) Resistance of the body Body resistance against disease is reduced.
- (7) Alcohol psychosis (madness)

SMOKING AND ADOLESCENCE AND DRUGS (PREVENTION AND CONTROL)

• Smoking also paves the way to hard drugs. Tobacco has been used by human beings for more than 400 years. It is smoked, chewed or used as a snuff. Tobacco contains a large number of chemical substances including nicotine, an alkaloid. Nicotine stimulates adrenal gland to release adrenaline and nor-adrenaline into blood circulation, both of which raise blood pressure and increase heart rate. Smoking is associated with increased incidence of

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cancers of lungs,

ut-inary bladder and throat, bronchitis, emphysema, coronary heart disease, gastric ulcer, etc. Tobacco chewing is associated with increased risk of cancer of the oral cavity.

- Smoking increases carbon, monoxide (CO) content in blood and reduces the concentration of haembound oxygen. This causes oxygen deficiency in the body.
- When one buys packets of cigarettes one cannot miss the statutory warning that is present on the packing which warns against smoking and says how it is injurious to health. Yet, smoking is very prevalent in society, both among young and old. Knowing the dangers of smoking and chewing tobacco, and its addictive nature, the ybuth and old need to avoid these habits.

Any addict requires counselling and medical help to get rid of the habit.

Tobacco smoking and diseases

- **Cancer** : About 90% of victims of **lung cancers** are associated with smoking. Another cancer is **mouth cancer** due to chewing of tabacco.
- Immunity becomes weak due to regular use of tobacco
- Use of tabacco increases the male infertility.
- Adrenaline release becomes increase which also increase blood pressure and rate of beart heat. It may lead cardiovascular diseases.
- Nicotine alkaloid causes reduced foetal growth and development in pregnant women.
- Carbon monoxide present in smoke combines with haemoglobin present in blood and forms **carboxyhaemoglobin**. It greatly reduces the oxygen carrying capacity of blood.
- Premature wrinkling may be possible.
- It is also known to cause **pulmonary tuberculosis**.
- Smoking causes inflammation of lung alveoli which decreases surface area for gaseous exchange and cause **emphysema**.
- Smoking causes irritation and inflammation of mucosa of throat and bronchi which causes **coughing** and **bronchitis**.
- Smoking accelerates the secretion gastric juices which causes gastric and duodenal ulcers.

Drugs of abuse are frequently taken with alcohol or other common medicine e.g. aspirin, insulin. Such combination can lead to increased sedation or reduces the effect or medicine or complication like hypertension.

ADOLESCENCE AND DRUG/ ALCOHOL ABUSE

- Adolescence means both 'a period' and 'a process' during which a child becomes mature in terms of his/her attitudes and beliefs for effective participation in society. The period between 12-18 years of age may be thought of as adolescence period.
- In other words, adolescence is a bridge linking childhood and adulthood. Adolescence is accompanied by several biological and behavioural changes. Adolescence thus is a very vulnerable phase of mental and psychological development of an individual. Curiosity need for adventure and excitement and experimentation constitute common causes. Which motivate youngsters towards drug and alcohol use.
- A child's natural curiosity motivates him/her to experiment. This is complicated further by effects that might be perceived as benefits of alcohol or drug use. Thus the first use of drugs or alcohol may be out of curiosity or experimentation but later the child starts using these to escape facing problems.
- Of late stress from pressures to excel in academics or examinations has played a significant role in persuading the youngsters to tr:y alcohol and drugs.
- The perception among youth that it is 'cool' or progressive to smoke use drugs or alcohol is also in a way a major cause for youth to start these habits.
- Television, movies, newspapers, internet also help to promote this perception. Other factors that have been seen to be associated with drug and alcohol abuse among adolescents are unstable or unsupportive family structures and peer pressure.

PREVENTION AND CONTROL

- The age-old adage of 'prevention is better than cure' holds true here also.
- It is also true that habits such as smoking, taking drug or alcohol are more likely to be taken up at a young age, more during adolescence.

Hence, it is best to identify the situations that may push an adolescent towards use of drugs or alcohol, and to take remedial measures well in time. In this regard, the parents and the

teachers have a special responsibility. Parenting that combines with high levels of nurturance and consistent discipline, has been associated with lowered risk of substance (alcohol/drugs/tobacco) abuse. Some of the measures mentioned here would be particularly useful for prevention and control of alcohol and drugs abuse among adolescents

- (i) Avoid undue peer pressure- Every child has his/her own choice and personality, which should be respected and nurtured. A child should not be pushed unduly to perform beyond his/her threshold limits be it studies, sports or other activities.
- (ii) Education and counselling- Educating and counselling him/ her to face problems and stresses, and to accept disappointments and failures as a part of life. It would also be worthwhile to channelise the child's energy into healthy pursuits like sports, reading, music, yoga and other extracurricular activities.
- (iii) Seeking help from parents and peers- Help from parents and peers should be sought immediately so that they can guide appropriately. Help may even be sought from close and trustei:l friends. Besides getting proper advise to sort out their problems, this would help young to vent their feelings of anxiety and guilt.
- (iv) Looking for danger signs- Alert parents and teachers need to look for and identify the danger signs discussed above. Even friends, if they find someone using drugs or alcohol, should not hesitate to bring this to the notice of parents or teacher in the best interests of the person concerned. Appropriate measures would then be required to diagnose the malady and the underlying causes. This would help in initiating proper remedial steps or treatment.
- (v) Seeking professional and medical help- A lot of help is available in the form of highly qualified psychologists, psychiatrists, and deaddiction and rehabilitation programmes to help individuals who have unfortunately got in the quagmire of drug/alcohol abuse. With such help, the affected individual with sufficient efforts and will power, can get rid of the problem completely and lead a perfectly normal and healthy life.

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