From where	1)Diphyllobothrium latum (broad tapeworm , fish tapeworm)	2) taenia saginata (beef tapeworm, bald tapeworm)	3) taenia solium (pork tapeworm)
Geographical distribution	Lake regions in Europe, America, Russia, Japan and Central Africa.	Cosmopolitan,especially in cattle-raising countries.	-Pork-eating countries e.g. America, Europe.
Habitat	Small intestine	Small intestine.	Small intestine.
D.H	Man and fish eating animals e.g. dogs and cats.	Man	Man
I.H	• 1st : Cyclops. • 2nd : Fresh water fish (Salmon).	Herbivorous animals (cattle, sheep and camels).	Pigs and occasionally man.
Morphology	Adult :- ♥ Size : 3 - 10 meters. ♥ Scolex : Elongated, almond like with two grooves (bothria), one dorsal & one ventral. ♥ Strobila : More than 3000 segments: a- Immature segments b- Mature segments c- Gravid segments: Not present.	Adult :- ♥ Size : 4-10 meters. ♥ Scolex : Globular, with 4 cup shaped suckers at at the angles of the head. No rostellum or hooks. ♥ Strobila: 1000 - 2000 segments. ➢ Immature segments. ➢ Mature segments: • Squarish in shape Contains male & female genital systems ➢ Gravid segments: • Longer than broad • Uterus with 15 - 30 (18) lateral branches on each side • Full of eggs. • Detached singly out of the anus(with feces).	Adult :- ♥ Size: 4-6 meters. ♥ Scolex :- - Globular. - 4 cup shaped suckers. - Rostellum with 2 rows of taenoid hooks (short handle, guard & long blade) ♥ Strobila : About 1000 segments:- • Immature segments. • Mature segments : • Similar to T. saginata except :- *Smaller. *Testes Fewer. *Ovary : Trilobed. • Gravid segments :Similar to T. saginata except:- 1 - Smaller. 2 - Uterus: About 9 lateral branches on each side. 3 - Segments detach in groups. • Egg (D.S) & (I.S for pigs & man): Similar to T. saginata but highly infected to human.

			- immature form: Cysticercus cellulosa (I.S): Similar to cysticercus bovis, but detected in pork and the invaginated scolex carries 4 suckers, rostellum and hooks.
Pathogenesis and Symptomatology	**Disease: Diphyllobothriasis.** **1. General toxic manifestations and intestinal disturbances in the form of nausea, vomiting, hunger pain, dyspepsia, diarrhea & loss of weight.** **2. Manifestations pernicious anaemia due to consumption of vit.B12 and folic acid by the parasite.** **3. Intestinal obstruction by large number of worms.** **4. Neurological manifestations are common (headache, insomnia & convulsions)**	**Mode of Infection:-** **Man infected by eating beef either raw or improperly cooked e.g. steaks, hamburgers or grilled (kabab) containing viable cysticercus bovis. Pathogenesis and Symptomatology** **Disease:Taeniasis saginata** **1. Intestinal disturbance e.g. nausea, vomiting, hunger pains, colic, diarrhea or constipation.** **2. Toxic manifestations: Due to worm products e.g. dizziness, headache, insomnia & delirium.** **3. Intestinal obstruction.** **4. Loss of weight.** **5. Anxiety and nervousness due to continued migration of G. segments out of the anus ⇐ irritation & itching.**	**❖ Taeniasis solium: Due to ingestion of undercooked pork containing cysticercus cellulosa (the same clinical pictures as taeniasis saginata).** **❖ Cysticercosis: It develops when man ingested the T. solium eggs with food or drink or autoinfection ⇐ development of larvae (cyticercus cellulosa) in his tissues (ms, brain, eye, sucutaneous tissues).** **Symtomatology of cysticercosis:** **Symptoms depends on the size of cyst, number & site affected:** **• Muscle: Myositis with fever, muscle swelling ⇐ later, progresses to atrophy and fibrosis.** **• Brain : Increase of intracranial pressure, epileptic fits and headache.** **• Eye : Retinal oedema, haemorrhage, decreased vision or even visual loss.** **• Subcutaneous tissues: Firm, mobile painful nodules mainly on the trunk and extremities.**
Laboratory Diagnosis	**➢ Direct:-** **1. Stool examination for detection of eggs (direct and concentration methods).**	**1- Detection of eggs by stool examination (direct and concentration methods).** **2- Detection of gravid segments in the stool to differentiate between Taenia species.**	**➢ Direct methods:** **1- Biopsy from nodules for detection of larvae.** **2- CT and MRI for brain infection.**

	2. **Finding mature segments in faeces.** ➢ **Indirect: Blood picture for anaemia.**		3- **X ray for calcified cyst.** 4- **Ophthalmoscope for eye infection.** 5- **Surgical removal for detection of the larvae.** 6- **Stool examination for detection of eggs or gravid segments (only in patients having the adult worm).** ➢ **Indirect methods:** 1- **Serological tests.** 2- **Eosinophilia.**
Treatment	**1) Niclosamide.** **2) Praziquantel (Biltracide).** **3) Atebrine.** **4) Vitamin B12 & folic acid for pernicious anaemia.**	**1) Niclosamide (Yomesan).** **2) Praziquantel (Biltracide).** **3) Atebrine.**	**Treatment of Cysticercosis:** **1) Brain cyst: Anticonvulsant and antiparasitic drugs as praziquantel in combination with corticosteroids to reduce inflammatory reaction.** **2) Eye cyst:** ➢ **Cyst within the eye ⇐ surgical removal.** ➢ **Cyst outside eye globe ⇐ antiparasitic drugs with corticosteroids.** **3) Subcutaneous cyst: Surgical excision.** **4) Vitamin D and calcium to help calcification.** **Treatment of Taeniasis solium:** **Anti-cestodal drugs for adult as taeniasis saginata but:** **1)Niclosamide is contraindicated because it disintegrates the worms, releasing large number of eggs in the intestine which**

			increase the possibility of cysticercosis (internal autoinfection). **2)Atebrine causes nausea and vomiting. Anti-emetic must be given one hour before administration of Atebrine to avoid antiperistalsis and internal autoinfection.**
Life cycle