

# **Dictionary of Tropical Medicine**

## **for Health Professionals**

**Peter A. Leggat**  
**John M. Goldsmid**

**With specialist contributions**

**ACTM PUBLICATIONS**

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## **PREFACE**

This dictionary is directed at the health professional who is attempting to comprehend the vast array of terminology, which is found in tropical medicine and its related sciences. It is hoped that it will be especially useful to those who are studying tropical medicine or related areas.

Given that knowledge in the sciences related to tropical medicine is expanding at such a rapid rate, it has been necessary to use a broad brush approach, rather than a narrow one and tries to apply simple language in its definitions. Terms, both old and new, are included from the areas of tropical medicine, tropical public health, parasitology, and entomology. Some terminology is included from the areas of epidemiology and immunology, to assist readers in interpreting the literature. A number of contributors in specialised areas have been utilised to ensure completeness and accuracy as far as is possible.

By publishing this dictionary, The Australasian College of Tropical Medicine is neither restricting nor prescribing definitions for the terminology used in tropical medicine. Reference has been made to other dictionaries and works and these have been listed in the Bibliography. Correspondence is welcome, so that corrections, additions or expansions to definitions in this dictionary can take place.

Terms are given and defined in alphabetical order. Commonly used abbreviations, prefixes and suffixes, are separately defined in the introduction of this dictionary. It is hoped that those who use this dictionary will find it a useful aid.

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**Peter A. Leggat**

**John M. Goldsmid**

## LIST OF ABBREVIATIONS

AAFB	Acid-alcohol fast bacillus
ACTM	The Australasian College of Tropical Medicine
AFB	Acid-fast bacillus
AIDS	Acquired immunodeficiency syndrome
ALA	Amoebic liver abscess
API	Annual Parasitic Index
ARC	AIDS-related complex
BB	Borderline borderline leprosy
BCG	Bacillus Calmette-Guerin
BL	Borderline lepromatous leprosy
BT	Borderline tuberculoid leprosy
CLM	Cutaneous larva migrans
CNS	Central nervous system
CPR	Cardiopulmonary Resuscitation
CSF	Cerebrospinal fluid
CT	Computerised tomography
CVS	Cardiovascular system
DNA	Deoxyribonucleic acid.
EAdEC	Enteroadherent <i>Escherichia coli</i>
EAR	Expired air resuscitation
ECC	External cardiac compression
ECG	Electrocardiogram
EEG	Electroencephalogram
EHEC	Enterohaemorrhagic <i>Escherichia coli</i>
EIEC	Enteroinvasive <i>Escherichia coli</i>
ELISA	Enzyme-linked immunosorbent assay
EM	Electron microscopy
EPEC	Enteropathogenic <i>Escherichia coli</i>
ESR	Erythrocyte sedimentation rate
ETEC	Enterotoxigenic <i>Escherichia coli</i>
FTA-ABS	Fluorescent treponemal antibody absorption test
GIT	Gastrointestinal tract
G6PD	Glucose-6-phosphate dehydrogenase
Hb	Haemoglobin
HIV	Human immunodeficiency virus
HSV	Herpes Simplex Virus
Ig	Immunoglobulin
INAH	Isoniazid (isonicotinic acid hydrazide)
IV	Intravenous
LGV	Lymphogranuloma venereum
LL	Lepromatous leprosy
MCH	Mean corpuscular haemoglobin
MCHC	Mean corpuscular haemoglobin concentration
MCV	Mean corpuscular volume
mf	Microfilaria
NHMRC	National Health and Medical Research Council
PCR	Polymerase Chain Reaction
PCV	Packed cell volume
PPEM	Potentially Pathogenic Environmental Mycobacteria
PUO	Pyrexia of unknown origin



RBC	Red blood cell
RDA	Recommended Dietary Allowance
RNA	Ribonucleic acid
RPR	Rapid plasma reagin test
SC	Subcutaneous
SCUBA	Self-contained underwater breathing apparatus.
spp	Species
STD/I	Sexually transmitted disease/infection
TB	Tuberculosis
TPHA	<i>Treponema pallidum</i> haemagglutination assay
TPI	<i>Treponema pallidum</i> immobilisation test
TT	Tuberculoid leprosy
UTI	Urinary tract infection
VDRL	Venereal Diseases Reference Laboratory Test
VLM	Visceral larva migrans
WBC	White blood cell
WHO	World Health Organisation

## LIST OF COMMON PREFIXES AND SUFFIXES

-aemia	Of the blood	Sub-	Under
-algia	Pain	Super-	Above
Anti-	Against	Tachy-	Increased rate
Arthro-	Of the joints	Tracheo-	Of the trachea
Auto-	Self	Trans-	Across
-blast	Precursor	-uria	Of the urine
Brady-	Slow	Vaso-	Of blood vessels
Broncho-	Of the bronchial tree		
Carcin-	Cancer		
Cardio-	Of the heart		
-cidal	Killing		
Cysto-	Of the bladder		
Dys-	Painful/difficult		
Ecto-/Exo-	External/outside		
Endo-	Inside		
Entero-	Of the intestine		
Epi-	Upon		
Ex-	Out of		
Exo-	Outside		
Extra-	Out of		
-form	Taking the shape of		
Gastro-	Of the stomach		
Haemo-	Of the blood		
Hepato-	Of the liver		
Hyper-	Above		
Hypo-	Below		
-iasis	Disease of		
Inter-	Within		
Intra-	Between		
-itis	Inflammation		
Leuco-	Pertaining to the white blood cells		
-megaly	Enlargement		
Myo-	Of the muscle		
Neo-	New		
Nephro-	Of the kidney		
Neuro-	Of the nerve or nervous system		
-oid	Taking the shape of		
-ologist	The person who studies		
-ology	The study of		
-oma	Tumour		
Pan-	Whole/all/complete		
Para-	Beside/next to		
Peri-	around		
Pleo-	more than one/many		
Poly-	many		
Pre-	Before in time or place		
Pro-	Before in time or place		
Renal-	Of the kidney		
Rhino-	Of the nose		
-static	Inhibiting		

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# A

***Acanthaster planci*** The Crown-of-thorns starfish, known for the considerable damage that it may cause to coral reefs. It seems to occur in epidemics. The spines are venom-tipped, but usually the envenomation leads only to a painful spike wound which may sometimes get infected. Multiple spikes, either in one episode, or many individual stings rarely lead to systemic symptoms, but may lead to hypersensitivity.

**Acquired Immune Deficiency Syndrome (AIDS)** A severe manifestation of infection with the Human immunodeficiency virus (HIV).

**Acute** Occurring suddenly or over a short period of time.

**Adder** A group of snakes with a wide geographical distribution. Belong to the family Elapidae. Also known as vipers.

**Adenocarcinoma** Malignant tumour of glandular epithelium.

**Adenoma** Benign tumour of glandular epithelium.

**Adult Mosquito** The adult (imago) is a slender, delicate insect with six comparatively long, thin legs. The outer covering of the body is composed of a tough substance called chitin. The body is divided into three distinct parts: head, thorax and abdomen.

**Aedes** A mosquito genus in the sub-family Culicine. Various species may transmit arboviral and filarial infections.

**Aeromonas** A genus of Gram negative rods that can cause wound infections, especially in Aquaculture workers. Certain pathotypes can also be the cause of diarrhoea, including Travellers' Diarrhoea.

**Aetiologic Agent** An agent pertaining to aetiology.

**Aetiology** The cause of a disease. The study of the causes of diseases. May be classified as follows:

Genetic	Congenital
Infection	Autoimmune
Nutrition	Toxic
Environment	Traumatic
Neoplastic	Metabolic
Psychosomatic	Degenerative
Iatrogenic	Idiopathic

**Agent** A substance, living or inanimate, or a force, sometimes rather intangible, the excessive presence or relative lack of which is the immediate or proximal cause of a particular disease.

**AIDS** See Acquired Immune Deficiency Syndrome.

**AIDS-related complex** A variety of chronic symptoms and physical findings that occur in some persons who are infected with HIV, but do not meet the Centres for Disease Control's definition of AIDS. Symptoms may include chronic swollen glands, recurrent fevers, unintentional weight loss, chronic diarrhoea, lethargy, minor alterations of the immune system (less severe than those that occur in AIDS), and oral thrush. ARC may or may not develop into AIDS.

**Ala** A winged-like expansion of cuticular integument of nematodes; an expansion at the oesophageal region called "cervical alae", e.g. in *Toxocara* species, or at the posterior end called "caudal alae" and in the larval stages of some nematodes the expansion may extend almost entire lateral aspects of the body, these expansions are called "lateral alae". In Oxyuridae, e.g. *Enterobius vermicularis*, the cuticle at the anterior end expands dorso-ventrally into "cephalic alae".

**Algid** A fever in which the patient suffers from peripheral vascular collapse. Also known as a "cold" fever as their skin feels cold and clammy.

**Alopecia** The loss of hair. Often occurs after treatment of cancer with chemotherapeutic agents.

**Ameloblastoma** Aggressive benign tumour of jaw, usually the lower jaw. It is more common in Asian and African people. It results from a proliferation of ameloblast cells, which is the cell that forms enamel.

**Amoebiasis** Protozoal disease caused by *Entamoeba histolytica*, which may present as an amoebic liver abscess, intestinal amoebiasis or disseminated amoebiasis.

**Amoebic Liver Abscess (ALA)** Abscess of the liver caused by *Entamoeba histolytica* and often containing so-called "anchovy sauce" fluid.

**Anaplasia** Type of cancerous change in which the cancer cells involved do not resemble the cells from which they arose. Undifferentiated.

*Ancylostoma caninum* See eosinophilic enteritis.

*Ancylostoma duodenale* See hookworm.

**Anaemia** A reduced number or volume of red blood cells, which results in lowered haemoglobin levels as seen in a number of tropical diseases, e.g. malaria, hookworm disease. It may present with a number of symptoms and signs including fatigue and pallor, especially of the conjunctival and mucous membranes. There are many possible causes.

**Anaerobic** A process where oxygen is not used.

**Analgesia** Pain reduction or relief.

**Anaphylaxis** Increasing sensitivity of the body to a protein after an initial reaction which may have been mild. The second or third exposure to this protein may cause severe respiratory or circulatory embarrassment, leading to death.

**Anemone** A usually colourful group of Anthozoans common on reefs. Contact with human skin of divers or snorkellers may cause severe, localised skin reactions, and systemic symptoms including severe tiredness. Research is current in this area.

*Anopheles* A mosquito genus in the subfamily Anophelinae. Only certain species transmit human malaria and filariasis.

**Anorexia** Loss of appetite for food.

**Anthozoa** The taxonomic Class of animals, including sea anemones, and hard and soft corals.

**Anthrax** A zoonotic infection of humans contracted from sheep, cows and similar animals and their products. Caused by *Bacillus anthracis*, a spore-bearing Gram positive rod. Anthrax includes a cutaneous form (malignant pustule), a pneumonic form (Woolsorters' disease) and intestinal anthrax. The form of the disease depends largely of the site of entry.

**Antibody** A protein belonging to the class of proteins called immunoglobulins. Antibodies are produced by plasma cells to counteract specific antigens or foreign proteins (including infectious agents like viruses, bacteria, etc... or venom). The antibodies then combine with the antigen they are made to fight and often cause the death of that infectious agent. Their presence helps prevent symptoms or disease processes on further exposures to the same antigen.

**Antigen** A substance (often a protein or carbohydrate on the surface of an infectious agent) foreign to the body that stimulates the formation of specific antibodies to combat its presence. Any protein (including toxins) encountered that may cause the body to produce antibodies against it.

**Antivenom** Antibody mixtures produced by an animal after exposure to small doses of an injected venom that may be harmful to man. As the doses are small, the injection is not lethal and antibodies are formed. This resultant antibody mixture is then collected from the animals blood, purified, concentrated, and thus becomes an antivenom. It can then be injected into humans to counteract symptoms (or death) produced by the venom of the animal potentially lethal to humans. An antivenom is specific for the venom against which it is prepared, and does not neutralise other antivenoms. A rare exception to this is Tiger snake (*Notechis scutatus*) antivenom which can be used to effectively counteract the venom of the sea snakes if specific sea snake antivenom is not available.

**Anus** In nematodes, an opening of the alimentary system on the ventral side at the posterior end of the female nematodes.

**API** The Annual Parasitic Index per 1000 population in obtained by dividing positive cases (x 1000) by total population.

**Apicomplexa** Sporozooan protozoa which have no organs of locomotion. Includes the malaria parasites (*Plasmodium*) and *Toxoplasma*.

**Arbovirus** A class of viruses transmitted by arthropods. Name contracted from "arthropod-borne viruses".

**Argassid** A family of ticks – the soft ticks or tampans. Vectors of Endemic relapsing fever.

**Artemether** Also called Arteether and more soluble forms called Artesunate. An antimalarial drug derived from artemisinin. Artemisinin is produced from the Chinese herbal drug Qinghaosu. It is used for rapid clearance of susceptible peripheral parasites, especially in the treatment of severe malaria, due to *Plasmodium falciparum*

**Arthropod** Animals characterised by several jointed legs and a hard outer exoskeleton, eg, spiders, ticks, mites and insects (the group that includes mosquitoes).

**Ascaris** A genus of nematodes which includes the intestinal roundworm of humans, *Ascaris lumbricoides*).

**Ascites** An accumulation of a serous effusion in the abdominal cavity seen in a number of conditions such as cirrhosis and schistosomiasis.

**Asepsis** Absence of septic matter, or freedom from infection. The prevention of the access of microorganisms.

**Aseptic technique** Not septic; free from septic material technique.

**Ashdown's medium** A differential selective culture medium for *Burkholderia pseudomallei*, devised by Dr Lesley Richard Ashdown (1943-93), Townsville, Australia. *B. pseudomallei* grows as distinctive purple rugose colonies on this medium.

**Aspergillosis** Infection caused by the opportunistic saprophytic fungus, *Aspergillus*. Can include the effects of aflatoxin which is formed by the fungi growing on mouldy foods such as peanuts and which can be associated with cancer of the liver.

**Assessment** A process of evaluating options which enables informed choices to be made between alternatives.

**Asystole** Absence of visible contraction of the heart, and consequent circulation of the blood, resulting rapidly in death. This may occur after envenomation.

**Atrax** A genus of spiders which includes the Australian Funnel Web spiders.

**Attenuated** Weakened.

**Atypical mycobacteria** A group of mycobacteria which differ in their growth characteristics from *Mycobacterium tuberculosis* but which they resemble in being acid-fast. The atypical mycobacteria are also known as the Potentially Pathogenic Environmental Mycobacteria (P.P.E.M.). They can cause a spectrum of human disease which in some cases can resemble tuberculosis. Mostly they cause disease in immunologically compromised humans such as those suffering from AIDS.

**Australian encephalitis** An arboviral disease in Australia transmitted by mosquitoes.

**Autoinfection** Self-infection eg from one body site to another.

**Average incidence density** The ratio of the number of new cases of the disease and the amount of population-time of follow-up (e.g. person-year) of the disease-free population.

# B

**Bacillus cereus** A Gram positive saprophytic rod which grows on parboiled unrefrigerated rice and other food. It produces potent exotoxins which can cause food poisoning – especially in Chinese and other restaurants specialising in rice dishes. Food poisoning from this organism can cause an emetic syndrome (associated with vomiting) or a diarrhoeal syndrome.

**Bacteraemia** Presence of bacteria in the blood stream without multiplication.

**Bacteria** Single or multicellular organisms belonging to Kingdom Prokaryotae. These single cell prokaryotic organisms are often coccoid or rod-shaped but can also be curved, pleomorphic or spiral. They can be Gram positive, Gram negative or Gram variable.

**Bacteriophage** A virus which parasitises a bacterium; a bacterial virus.

**Balantidium coli** A ciliate protozoan of pigs which can infect humans causing balantidial dysentery.

**Barmah Forest virus** A mosquito-borne arbovirus causing symptoms similar to Ross River virus infection in Australia. (See also Ross River virus).

**Bartonella** A genus of small Gram negative bacilli. Include the agents for Bartonellosis (Carrion's Disease) caused by *B. bacilliformis* in South America. Other species include *B. henselae*, the cause of Cat Scratch Fever and *B. quintana*, the cause of Trench Fever.

**Basal Cell Carcinoma** A generally slow growing malignant epithelial tumour, which has potential to invade and metastasise, especially if untreated.

**Bat** Winged mammals which can be associated with the transmission of rabies, Lyssavirus and Australian Bat Morbillivirus infections to humans. Most species are insectivorous or fruit-eaters, but the vampire bats of Latin America feed on mammalian blood.

**BCG** (Bacillus Calmette-Guêrin) A live attenuated vaccine used in tuberculosis.

**Bedbugs** Blood sucking hemipterans belonging to the genus *Cimex*. Not important in the transmission of disease but can cause irritating allergic response to their saliva.

**Benign** Non-malignant neoplasm; a neoplasm that is not locally invasive and does not spread to distant sites (metastasise).

**Beta lactams** Antibiotics with a beta-lactam ring in their molecular structure, including the penicillins and the cephalosporins. Act on penicillin binding proteins in the mucopeptides of the bacterial cell wall. Can be destroyed by bacterial beta-lactamases.

**Betelnut** An areca-nut chewed in India, south east Asia and the Pacific, including Papua New Guinea, as a stimulant. Betelnut can have side effects such as staining of teeth and is possibly carcinogenic.

**Biguanides** Group of antimalarial drugs which includes Proguanil (Paludrine) used for malaria prophylaxis.



**Bilharzia** Schistosomiasis; a disease caused by a parasitic trematode and acquired by contact with water infected with cercariae shed by the snail intermediate host.

**Bioassay** Assessment of the efficacy and persistence of an insecticidal treatment by exposing mosquitoes of known susceptibility to a treated surface or area for a standard period of time.

**Biological Control** Use of natural, indigenous predators or organisms to control medically important insects.

**Biopsy** A surgical process in which a small piece of tissue is cut out or otherwise sampled, e.g. through a needle biopsy, to enable a diagnosis to be made.

**Bipolar staining** The effect of the two ends of a bacillus staining while the centre of the rod remains unstained (eg in *Yersinia pestis*, the cause of Bubonic Plague) when stained with Giemsa stain.

**Bite** The use of teeth or other similar hard substance to puncture the skin of a victim, possibly resulting in the introduction of venom (eg snake bite). c.f. poison and sting.

**Blackfly** Blood-sucking flies belonging to the genus *Simulium*. Includes the vectors of human Onchocerciasis (River Blindness) in parts of Africa and Latin America.

**Blastomycosis** A deep (systemic) mycotic infection caused by dimorphic fungi. North American Blastomycosis caused by *Blastomyces dermatitidis* in N. America and tropical Africa while *Paracoccidioides brasiliensis* causes South American Blastomycosis in South America.

**Blubber** Colloquial term for *Catostylus*, the most common rhizostome jellyfish in Australia.

**Bluebottle** Colloquial term for the single-tentacled *Physalia utriculus*.

**Blue-ringed octopus** Colloquial term for *Hapalochlaena* spp.

**B-Lymphocyte (or B-Cell)** A type of white blood cell that circulates through the body and is able to detect the presence of the foreign agents. Once exposed to an antigen on the agent, these cells differentiate into plasma cells to produce antibody.

**Boomerang leg** A condition whereby the tibiae are curved resulting from such conditions as congenital syphilis or yaws. Also known as sabre tibiae.

**Boomslang** An African tree snake belonging to the Family Colubridae. It is highly poisonous, the venom being haemotoxic in nature and causing profuse bleeding. Bites are, however, rare as the snake is back fanged.

**Box-jellyfish** Colloquial term used by most Australians to refer to *Chironex fleckeri*, but which actually includes every species of the Class Cubozoa.

**Bothrium** A longitudinal groove in the scolex of pseudophyllidean tapeworms.

**Borrelia** A genus of spirochaetes causing Lyme Disease (*Borrelia burgdorferi*) and Relapsing fever (*B. recurrentis*; *B. duttoni*). These zoonotic infections are transmitted through the bites of argassid ticks (tampans).

**Bromeliad** A plant in the family which includes pineapples. They often have small collections of water at the base of the leaves and are favoured breeding places of *Aedes aegypti* and other mosquitoes.

**Brood capsule** A small cyst attached to a germinal layer of the hydatid, containing many protoscolices.

**Brown snake** A poisonous snake found on the mainland of Australia. It belongs to the family Elapidae and is extremely venomous, having a potent neurotoxin.

**Brucellosis** A zoonotic disease of humans contracted from goats, sheep, pigs or cattle. Can be caused by *Brucella melitensis*, *B. abortus* or *B. suis*. Unpasteurised milk can be a source for human infection. Often presents as a PUO.

**Bubo** Enlarged lymph gland containing pus. Often in the groin. Seen especially in Bubonic Plague, Lymphogranuloma venereum and chancroid.

**Bubonic Plague** A severe illness caused by the Gram negative rod, *Yersinia pestis*. The reservoirs for the infection are various species of rodent and the bacteria are transmitted through the bite of the rat flea, *Xenopsylla cheopis*. Patients present with enlarged lymph glands ('buboes') often in the groin or armpit. Can become septicaemic or develop into a pneumonia ('Pneumonic Plague') and spread by droplet. Also known in the past as "The Black Death".

**Buccal capsule** The thickening of the cuticular lining of buccal cavity; buccal capsule may be large, small, vestigial or absent. In some nematodes, the cuticle lining within the buccal capsule may be modified to be chitinous teeth or cutting plates as in Ancylostomatidae or a stylet as in Trichinelloidea.

**Bullrout** A venomous fresh water fish similar to stonefish. See Scorpaenidae.

**Burkholderia** A genus of Gram negative rods including *Burkholderia pseudomallei* which can cause a severe infection of humans, called melioidosis in tropical regions including Australia and S.E.Asia.

**Burkitt's lymphoma** Lymphoid tumour associated with Epstein-Barr (EB) virus. Especially common in malaria endemic areas, such as Africa and Papua New Guinea. May be associated with the immunosuppressive effects of the malaria infection.

**Bursa** An umbrella-like expansion of the cuticle at the posterior end of some male nematodes as in Ancylostomatidae and Metastrongylidae. The bursa is supported by elongated stalks called "rays". The shape and size of the bursa and the arrangement and size of the rays are used for identification of the nematodes

**Butterfly cod** See Scorpaenidae.

**Button spider** A South African spider similar to the Redback spider of Australia and the Black Widow spider of America. Belongs to the species *Latrodectus indistinctus*.

## C

**Cachexia** Wasting of body tissues. Extremely thin (cachectic).

**Cancer** Malignant neoplasm. Uncontrolled cell growth with local invasion and/or distant spread.

**Candida** A yeast-like fungus which comprises part of the normal flora of the gut but which can cause candidiasis (which includes oral and vaginal thrush) usually as an overgrowth syndrome in diabetics, the immunologically compromised, or as a result of the use of broad spectrum antibiotics (e.g. tetracyclines) and the contraceptive pill.

**Capillaria** A genus of nematode which includes *Capillaria hepatica* and *C. philippinensis* both of which can infect humans.

**Carcinogen** A chemical or other agent that has been implicated in causing cancer.

**Carcinoma** Cancer of the tissues which cover or line the body surfaces and internal organs.

**Carcinoma-in-situ** Malignant epithelial tumour showing no invasion.

**Carcinoma simplex** Poorly differentiated adenocarcinoma.

**Cardiac arrest** Absence of a palpable pulse, and thus of circulation of blood around the body by the heart contraction. The cause may be asystole or ventricular fibrillation.

**Cardio-pulmonary resuscitation** A combination of mouth to mouth resuscitation (E.A.R.) to oxygenate the blood, and external chest compression (E.C.C.) to compress the heart to help pump this artificially oxygenated blood around the body to maintain tissue oxygen concentration and prevent death.

**Carrier** A carrier is an infected person (or animal) that harbours a specific infectious agent in the absence of discernible clinical disease and thus serve as a potential source of infection for human.

**Carybdea rastoni** A small box-jellyfish with a single tentacle in each corner. Common in non-tropical areas such as Western Australia and South Australia, the sting is usually mild, but occasionally may cause severe skin pain. Commonly known as the Jimble.

**Carybdeids** Jellyfish members of the Class Cubozoa with a single tentacle in each of the four corners (except in certain rare species).

**Carukia barnesi** Also known as the Irukandji, *Carukia* is a small, virtually invisible, box-jellyfish with a single tentacle in each corner (carybdeid). The sting may be quite mild, and is sometimes not visible on the skin. However, some 30 minutes after the sting a number of severe systemic symptoms called the Irukandji syndrome occur. The symptoms include severe low back pain, muscle cramps in all 4 limbs and the chest wall, restlessness, anxiety, and a "feeling of potential doom" (often shared by the first aider!). Severe hypertension and pulmonary oedema may occur, which may become life-threatening, although no deaths have been reported to date. The effects are believed to be due to the excess release of catecholamines.

**Case** A particular instance of disease; as in a case of typhoid fever. A case is not synonymous with a patient, for

the latter is the human being affected with the disease.

**Case fatality rate** The number of fatal cases of specific disease, divided by total number of known cases and it is usually expressed as percent. Case fatality is one index of disease severity and is of more interest in acute than in chronic disease.

**Case control study** A design for epidemiological studies that matches individuals with a disease or health problem (cases) with others who do not have that condition (controls). Frequently, individuals included in the study are matched for factors such as age, race, socioeconomic status, occupation and area of residence. Comparisons are then made between the two groups.

**Catecholamines** Hormones released by the body under any stressful reaction, or after envenomation (eg Irukandji), that affect the circulatory system, often increasing heart rate and blood pressure.

**Catostylus** Commonly known as the blubber, *Catostylus* is a rhizostome jellyfish with no tentacles but which has 8 modified feeding 'arms' armed with nematocysts. Usually causes a very mild sting with slight skin irritation, although more severe stings have been rarely reported.

**Caudal papillae** A group of sensory organs at the posterior end of some male nematodes (excluding "phasmids" which are situated on the lateral aspects of the tip of the tail); the number and arrangement of caudal papillae are used for identification of nematodes such as in Ascarididae and Thelaziidae.

**Cause specific** These rates commonly are also age, death rate sex, or race specific. They are expressed as numbers of deaths assigned to a stated cause in a calendar year, divided by total population as of July 1st of that year, expressed in 100,000.

**Cell** The smallest unit of living material that can function independently.

**Cell-mediated immunity** A defence mechanism involving the coordinated activity of two subpopulations of T-Lymphocytes, helper T-Cells and killer T-Cells. Helper T-Cells produce a variety of substances that stimulate and regulate other participants in the immune response. Killer T-Lymphocytes destroy cells in the body that bear foreign antigens (e.g. cells that are infected with viruses or other microorganisms).

**Cephalic papillae** A group of sensory organs around the mouth opening (excluding amphids which are situated on the lateral aspects of the mouth); the number and arrangement of the cephalic papillae are significant for the classification of nematodes.

**Cephalopod** Octopus. See blue-ringed octopus.

**Cercariae** The infective stages of the Schistosomes and other trematodes, which are free living in water. In some trematodes (e.g. *Fasciola*), the cercariae develop into metacercariae for infection.

**Cestoda** Tapeworms, which are segmented Platyhelminths (Flatworms) consisting, in their adult stage, of a scolex for attachment to the gut of the final host, an unsegmented neck region and a long segmented strobila consisting of immature, mature and gravid proglottids (segments).

**Chagas' Disease** A zoonotic protozoan disease endemic to parts of Latin America and caused by *Trypanosoma cruzi* with reduviid (Triatomid or assassin) bugs as the vectors.

**Chancroid** Tropical sexually transmitted disease caused by *Haemophilus ducreyi*. Also known as “Soft sore”. It is characterised by soft, extremely painful ulcers on the genitals and enlarged inguinal lymph nodes (“buboes”).

**Chemoprophylaxis** The administration of a chemical, including antibiotics, to prevent the development of an infection or the progression of the infection to active manifest infectious disease.

**Chemotherapy** The use of chemicals/pharmaceuticals to treat disease.

**Childhood immunization schedule** The schedule laid down by most countries to recommend which routine immunizations should be given to children and the intervals at which boosters should be administered. Such routine immunizations usually include tetanus, diphtheria, pertussis, polio, Hepatitis B, *Haemophilus influenzae* type b (H.I.B.) and after one year of age, measles, rubella and mumps vaccines.

**Chiropods** Jellyfish members of the Class Cubozoa with more than one (and up to 15) tentacles in each corner. The jellyfish group causing more morbidity and mortality than any other in the world. At present there are 5 common species acknowledged, but current research may change this.

**Chiropus gorilla** A multi-tentacled box-jellyfish present on the western coast of tropical Africa. Has the potential to cause human death, although none have been reported to date.

**Chironex fleckeri** A multi-tentacled box-jellyfish present in tropical Australian waters and responsible for at least 63 deaths since first reported in 1883. Specimens have recently been discovered in Borneo, and are currently believed to be even more widespread in the Indo-Pacific.

**Chironomid** A family of biting flies known as “biting midges”.

**Chiropsalmus quadrigatus** A multi-tentacled box-jellyfish present throughout the Indo-Pacific, and currently believed to be responsible for regular deaths in many Indo-Pacific countries, amounting to many thousands of deaths over time. Looks similar to *Chironex*, leading to some difficulties in identification.

**Chiropsalmus quadrumanus** A multi-tentacled box-jellyfish present on the eastern coastline of tropical America. It has caused at least one documented death in Texas, U.S.A.

**Chiropsalmus buitendijki** A multi-tentacled box-jellyfish present in the tropical eastern Indian Ocean, but particularly common around south India, Sri Lanka and eastwards towards Java.

**Chloroform** A chemical used for immobilising mosquitoes to facilitate their handling. It is toxic and should be used with extreme care.

**Chloroquine** A 4-aminoquinoline drug commonly used for treating malaria. Resistance is widespread in *Plasmodium falciparum*.

**Chlamydia** A genus of intracellular Gram negative bacteria including *Chlamydia trachomatis*, *C. pneumoniae* and *C. psittaci*.

**Cholangiocarcinoma** A cancer in the bile ducts of the liver associated with opisthorchiasis. See Opisthorchiasis.

**Chromoblastomycosis** A subcutaneous fungal disease caused by the dermatiaceous fungi belonging to the genera *Phialophora*, *Fonsecaea* and *Cladosporium*.

**Chronic** A term that is used to describe a disease of long duration or one that is progressing slowly.

**Chronic diarrhoea** Refers to diarrhoeal episodes of presumed infectious aetiology that begin acutely but have an unusually long duration, usually more than 14 days (see also WHO Classification).

***Chrysaora quinquecirrha*** A jellyfish very common on the eastern seaboard of the United States where vast numbers of nuisance stings occur seasonally (summer) each year. It causes mainly an irritating skin rash, but may cause systemic symptoms including painful breathing, nasal and respiratory catarrh and cough. No deaths have ever been reported. Possibly also present in Western Australia.

**Ciguatera** Tropical fish poisoning occurring some 1-24hrs after ingestion of fish containing ciguatoxin. Symptoms are diverse and include (in approximate frequency): lassitude, muscle pains, burning of skin when cold objects are touched, itching, joint pains, paraesthesiae (especially hands, feet and lips), headache and diarrhoea, as well as many other less common symptoms. Ciguatera is a major world health problem in Countries relying on reef fish as the main source of protein and has caused many deaths. Neurological signs and symptoms may last for months, even years.

**Ciguatoxin** The toxin causing ciguatera. It is produced by dinoflagellates which are then eaten by small fish. As these fish get eaten by larger ones progressing up the food chain the toxin becomes concentrated in the flesh (and liver) and can then intoxicate humans. In humans the toxin is not destroyed and so further ingestion of ciguatoxin causes a cumulative effect.

**Cilia** Tiny hair-like cells that beat together, 'wafting', like a field of corn. They have the specialised function of moving substances (eg. food) across an area. Cilia also serve as organs of locomotion for ciliate protozoa.

**Ciliophora** (Syn = Ciliata) Protozoa moving by means of short hair-like cilia covering the cell. There is only one species of medical importance, *Balantidium coli*, the cause of balantidial dysentery.

**Cirrus** The male copulatory organ in helminths.

**Cirrus pore** The opening through which the cirrus is protruded.

**Cirrus pouch** A hollow organ surrounding the inverted cirrus.

**Class** The taxonomic group below a Phylum, and above Order. See Taxonomy.

**Clinical trial** Studies which test drug safety and efficacy prior to registration.

1. Phase I: a study in human volunteers to establish safety of a pharmaceutical agent.
2. Phase II: the first investigation of a new drug in patients to determine the preliminary evidence of efficacy and to confirm safety.
3. Phase III: trials designed to determine long term safety, efficacy and cost-effectiveness of a new drug in large numbers of patients.

**Cloaca** A common opening of the alimentary and reproductive systems of male nematodes, normally situated on the ventral side at the posterior end of the body.

**Cnidaria** The specific term now used by biologists to describe members of a Phylum which are principally marine

animals, radially symmetrical, and which have tentacles (i.e. jellyfish). Reproduction usually encompasses a polyp and/or medusa stage. Previously this Phylum was aggregated with others under the term coelenterates.

**CNS** Central nervous system; refers to the brain and spinal cord.

**Cobra** Snakes belonging to the Family Elapidae. They have fixed front fangs and are widespread throughout Africa and Asia. Possess a potent neurotoxin.

**Coelenterates** Animals having no spine. This group originally contained Spongiaria, Cnidaria and Ctenophora. Coelenterata is a term which generally includes the cnidarians and ctenophores. As the phylum Cnidaria does not include the ctenophores, the two terms are not interchangeable.

**Cofactor** A factor other than the basic causative agent of a disease that increases the likelihood of developing that disease. Cofactors may include the presence of other microorganisms or psychological factors such as stress.

**Cone shells** Molluscs with cone-shaped shells, at least two species of which (*Conus geographicus* and *C. textile*) have been responsible for some 18 human deaths, usually from respiratory arrest. *C. geographicus* has caused at least one Australian death.

**Conjunctivitis** Inflammation and redness of the lining of the white part (conjunctiva) of the eye.

**Complex** A group of closely related species once thought to be a single species.

**Cobalt Treatment** Radiation that uses gamma rays generated by cobalt-60, a radioactive isotope of the element cobalt.

**Cold packs** An excellent analgesic treatment for the skin pain of many envenomations, especially those of jellyfish stings. It is usually less effective than heat for the treatment of stonefish, stingray and other venomous-spined fish envenomations.

**Colonisation** The development of cells in a part to which they have been carried by metastasis. Can also be used to describe bacteria establishing and multiplying on a particular part of the body.

**Colostomy** A temporary or permanent opening in the colon and the abdominal wall to allow faeces to pass out before reaching the anus.

**Communicability** Capability of being transmitted from one person to another.

**Communicable disease** An illness due to a specific infectious agent or its toxic products which arises through transmission of that agent or its products from a reservoir to a susceptible host- either directly, through the agency of an intermediate plant or animal host, vector, or the inanimate environment.

**Communicable period** The time or times during which the infectious agent may be transferred directly or indirectly from an infected person to another person, from an infected animal to human, or from an infected human to an animal, including arthropods.

In diseases such as diphtheria and scarlet fever, in which mucous membranes are involved from the first entry of the pathogen, the period of communicability is from the date of first exposure to a source of infection until the infective microorganism is no longer disseminated from the involved mucous membranes, ie, from the period before the prodromata until termination of a carrier stage, if this develops. Most diseases are not communicable during the early incubation period or after full recovery.

In diseases transmitted by arthropods, such as malaria and yellow fever, the periods of communicability are those during which the infectious agent occurs in infective form in the blood or other tissues of the infected person in sufficient numbers to permit vector infections. A period of communicability is also to be distinguished for the arthropod vector - namely, that time during which the agent is present in the tissues of the arthropod in such form and locus (infective stage) as to be transmissible.

**Compression/immobilisation bandage** A firmly-applied, broad, elastic bandage applied to a limb to prevent the spread of venom injected after certain bites or stings. The pressure is enough to compress veins and lymphatic vessels, but not to cut off arterial supply and so it can remain on indefinitely. The bandage is first applied directly over the envenomated area, and then extended over the entire limb which is then immobilised in a splint.

**Congo-Crimean Haemorrhagic Fever** A tick-borne arboviral infection extending in distribution from Eastern Europe and Asia through to Southern Africa.

**Contact** A person or animal that has been in such association with an infected person or animal or a contaminated environment as to have had opportunity to acquire the infection.

**Contagious** An infectious disease which is transmissible from one person to another. Sometimes used synonymously with "infectious".

**Coracidium** A ciliated oncosphere which develops in the eggs of pseudophyllidean tapeworms.

**Coronavirus** RNA viruses causing the common cold

**Coronatae** The taxonomic order of grooved jellyfish.

**Corynebacterium** The genus of Gram positive bacilli including *Corynebacterium diphtheriae*, the cause of diphtheria in humans. Genus also includes *C. minutissimum*, the cause of erythrasma in humans and the diphtheroids which are commensal corynebacteria making up part of the human respiratory tract normal flora.

**Coxiella burnettii** A rickettsial organism which causes Q (Query) Fever, a zoonotic infection of particular importance to farmers, veterinarians and abattoir workers.

**C.P.R.** See Cardio-pulmonary resuscitation.

**Crablice** *Phthirus pubis* also known as the Pubic louse.

**Crown-of-thorns starfish** Colloquial term for the starfish *Acanthaster planci*. See *Acanthaster planci*.

**Cubomedusae** A term that included all box jellyfish species, now mainly replaced by cubozoa.

**Cubos** Colloquial name used in the Philippines and other Indo-Pacific countries to describe *Chiropsalmus quadrigatus*.

**Cubozoa** The taxonomic class of box-shaped jellyfish consisting both of chirodropids and carybdeids.

**Culicine** Most mosquitoes that are not anophelines fall into this group. Culicines are not vectors of human malaria, but the subfamily includes the important genera *Aedes*, *Culex* and *Mansonia*. May transmit a number of diseases



(eg, yellow fever, dengue fever, filariasis, viral encephalitis).

**Cumulative incidence** The proportion of number of newly detected cases that developed during follow-up by the number of disease-free subjects at the start of follow-up.

**Cutaneous larva migrans** A cutaneous eruption resulting from exposure of the skin the infective filariform larva of non-human hookworms, *Ancylostoma braziliense*, *A. caninum* and some *Strongyloides* spp (especially *S. procyonidis* of the raccoon and *S. myopotami* of the nutria).

**Cutaneous leishmaniasis** A spectrum of skin disease caused by protozoan *Leishmania* spp, with a lifecycle and vectors identical to that of *Leishmania donovani* (see visceral leishmaniasis). The spectrum of disease ranges from a single, dry cutaneous lesion (*L. tropica*) through to destructive mucocutaneous lesions (*L. braziliensis braziliensis*).

**CVS** Cardiovascular system. The heart, arteries, veins and capillaries.

**Cyanea** The most-common world-wide jellyfish with a flat, contracting bell with hundreds (thousands in large specimens) of fine tentacles hanging beneath. The size varies from a few centimetres bell diameter with 50cm long tentacles, to bell diameters up to 2.3 meters, with 30 meter long tentacles. Fortunately the sting, although it may cause moderately-severe skin pain, usually causes no systemic symptoms, although nausea, vomiting and dizziness have been reported.

**Cyclosporidium cayetanensis** Initially believed to be a blue-green alga now known to be an apicomplexan protozoan. Can cause diarrhoea in humans.

**Cryptococcus** A capsulate yeast which can infect humans. Can give rise to a cryptococcoma in the lung and may lead to cryptococcal meningitis. One species with two subspecies recognised, *Cryptococcus neoformans neoformans* in which human infection is associated with pigeon droppings and *C. neoformans gattii* associated with Red River Gums.

**Cryptosporidium** Apicomplexan protozoan associated with a watery diarrhoea in children and immunocompromised adults. Zoonotic infection often contracted from contaminated water. Commonest species in humans is *Cryptosporidium parvum*.

**Cysticercoid** A larval form of a tapeworm (e.g. *Hymenolepis*) which has a solid body and no bladder.

**Cystadenoma** Benign tumour of epithelial tissue forming cysts.

**Cysticercus** Larval stage of tapeworms belonging to the genus *Taenia*. Also known as bladderworms. The cysticercus of the Pork Tapeworm is called *Cysticercus cellulosae* and is the cause of human cysticercosis.

**Cytology** Study of cells removed from surface of organs (exfoliated cells) for the purpose of diagnosing cancer; e.g., Papanicolaou smear.

**Cytotoxic drugs** Chemicals used to kill cancerous cells. Most cytotoxic drugs also kill normal cells. There is a delicate balance between killing enough cancer cells and not so many normal cells.

## D

**DALY** Disability adjusted life years.

**Daughter cyst** A cyst formed by endogenous or exogenous budding from the germinal layer of a hydatid.

**Decompression illness (DCI)** An illness suffered by divers when diving too deep, or too long and characterised by nitrogen bubbles forming in the tissues of the body. This may cause a multitude of symptoms although joint pains are those most-commonly encountered. Confusion may be caused in divers that have suffered an Irukandji sting as the symptoms have some similarities. See also, cerebral gas embolism.

**DEET** Diethyltoluamide. An effective insect repellent used on the skin.

**Definitive or final host** An animal wherein the adult stage of the parasite resides.

**Dengue fever** (Syn. "Breakbone fever") A flavivirus, dengue virus types 1-4, transmitted by infected specific *Aedes* spp mosquitoes. Sudden abrupt onset of high fever, headache, retrobulbar pain and lumbosacral pain. Fever lasts 6-7 days and may be 'saddleback'. Initial symptoms followed by generalised myalgia, bone pain, anorexia, nausea, vomiting and weakness. A transient mottled rash may appear on 1st/2nd day and a second rash appears with resolution of fever - at first on trunk, spreading outward. WCC and platelet count depressed. Mild haemorrhagic phenomena in a few.

**Dengue haemorrhagic fever** Usually a second infection with a different serotype of the dengue virus (see dengue fever). A primary infection at a young age is common finding. Age of patient with DHF is often less than 5 years, but young adults may be affected. Severe illness with abnormal vascular permeability, hypovolaemia and abnormal clotting mechanisms. Bleeding into skin or internally. Dengue shock syndrome may also be a complication.

**Dermatophyte** Mould fungi belonging to the genera *Microsporum*, *Trichophyton* or *Epidermophyton*. Cause tinea or ringworm.

**Diarrhoea** Usually defined as the passage of three or more liquid motions within 24 hours. However, for exclusively breast-fed infants this may not be satisfactory and the definition is usually based upon what the mother considers to be diarrhoea.

**Diarrhoeal episode** Conventionally defined as beginning with the first 24-hour period that meets the definition of diarrhoea and ending with the last diarrhoeal day that is followed by at least two consecutive days that do not meet the definition of diarrhoea.

**Dick Test** Skin test used to determine the immune status to scarlet fever.

***Dientamoeba fragilis*** An intestinal flagellate protozoan of humans. May be associated with a mild diarrhoea.

**Differentiation** The process of natural change in a cell from simple to complex and performing a particular function.

**Dinoflagellates** Tiny organisms related to coral reefs that are responsible for a number of toxins including saxitoxin (paralytic shellfish poisoning) and ciguatera (tropical fish poisoning), and also causing red tides or "reef spawn" in tropical waters.

**Diphtheria** Disease caused by the exotoxin released by toxigenic strains of *Corynebacterium diphtheriae*. May present as cutaneous diphtheria (velvet sore), nasal diphtheria, or the more severe pharyngeal or laryngeal diphtheria.

**Diphtheroids** Non-pathogenic members of the bacterial genus, *Corynebacterium*. Comprise part of the normal flora of humans and may be occasional opportunistic pathogens.

**Diphyllobothrium latum** The broad or fish tapeworm of humans and other fish-eating mammals. Also called *Dibothriocephalus latum*. Infection acquired by eating fish containing the infective plerocercoid (sparganum) larva. May be associated in humans with a megaloblastic (macrocytic) anaemia due to competition for Vitamin B<sub>12</sub>.

**Dipylidium caninum** The Dog or double-pored tapeworm. Cosmopolitan in dogs. Occasionally infects humans by accidental ingestion of the intermediate host, the dog flea.

**Disease** State of dysfunction, subjectively or objectively apparent.

**Disseminated** Spread of the disease throughout the body, usually through the blood.

**Disinfection** Killing of infectious agents outside the body by chemical or physical means directly applied.

1. Concurrent disinfection is the application of disinfective measures as soon as possible after the discharge of infectious material from the body of an infected person, or after the soiling of articles with such infectious discharges. All personal contact with such discharges or articles being prevented prior to such disinfection.

2. Terminal disinfection is application of disinfective measures after the patient has been removed by death or to a hospital, or has ceased to be a source of infection, or after isolation practices have been discontinued. Terminal disinfection is rarely practised; terminal cleaning generally suffices along with airing and sunning of rooms, furniture and bedding. It is necessary only for diseases spread by indirect contact; steam sterilisation of bedding was considered desirable after smallpox (now eradicated).

**Distal** Description of part of the body that is furthest from the heart.

**DNA** Deoxyribonucleic acid. A type of nucleic acid that preserves the information needed by the cell to tell it how to grow and its role in the scheme of things. Genes are made from DNA.

**Donovan bodies** Diagnostic stages of granuloma inguinale (Donovanosis).

**Donovanosis** Also known as granuloma inguinale. A tropical sexually transmitted disease caused by *Calymmatobacterium granulomatis*.

**Doxycycline** An antibiotic of the tetracycline class also used to suppress malarial parasites and has variable effects against the liver stages of *Plasmodium falciparum*.

**Dracunculus medinensis** The Guinea worm of parts of Africa, the Middle East and Asia. A nematode worm causing painful subcutaneous lesions.

**Drop net** A large net on a rigid frame, which is dropped over vegetation to collect specimens of outdoor-resting mosquitoes.

**Dwarf tapeworm** *Hymenolepis nana*, a small cestode of rodents and humans.

**Dysentery** Bloody diarrhoea. The classical manifestations are fever, crampy abdominal pain, tenesmus with mucous bloody stool. All of the enteropathogens that have the facility to invade or destroy the intestinal mucosa, especially the colonic mucosa, will have clinical presentation of dysentery. The common organisms are *Shigella* spp, *Salmonella* spp, *Campylobacter jejuni*, *Yersinia enterocolitica*, Enteroinvasive *Escherichia coli* (E.I.E.C.), Enterohaemorrhagic *Esch. Coli* (E.H.E.C.) *Entamoeba histolytica*.

**Dysplasia** Abnormal atypical cellular proliferation, but not yet advanced enough to be called neoplasia. Usually a forerunner to neoplasia.

# E

**EAR** See expired air resuscitation.

**Ebola** One of the severe African viral haemorrhagic fevers.

**ECC** See external cardiac compression.

**Echinococcus** Genus of cestodes which includes the hydatid tapeworms, *Echinococcus granulosus*, *E. multilocularis*, *E. vogeli* and *E. oligarthrus*.

**Ecological area** A well defined geographical area, for example a tropical rain forest, characterised by certain assemblages of plants and animals (including insects).

**Ectoderm** The outer tissues of an organism from which nerve, gland and nematocyst cells will develop.

**Egg capsule** A membranous structure containing eggs of a tapeworm, in the absence of uterus (e.g. in *Dipylidium caninum*).

**Eggs** Fertilised female reproductive cells (ova) with nutrient material, e.g. those deposited by female mosquitoes and developing in water to produce free-swimming larvae.

**ER** Entomological Inoculation Rate.

**Elapidae** Family of snakes which includes poisonous snakes with fixed front fangs such as the cobras, the mambas and the Australian Tiger snakes.

**Elephantiasis** Marked swelling and inflammation of the lymphatics, associated with hypertrophy and thickening of the overlying skins and subcutaneous tissues, usually in the lower limbs and external genitalia. While not exclusive to filariasis, it is seen often in chronic filariasis due to *Wuchereria bancrofti* and *Brugia malayi*. The affected areas often taken on a woody character and can be extensive. See also filariasis.

**Emaciation** Wasting of body tissues. Thin (same as cachexia).

**Embolism** A blockage of blood vessels either by blood clot, fat or air; see gas embolism.

**Emetine** A drug used in the treatment of invasive intestinal or extraintestinal amoebiasis caused by *Entamoeba histolytica*. No longer widely used due to its toxicity. Dehydroemetine is also effective and is somewhat less toxic.

**Emporiatics** The study of the diseases of travellers or Travel Medicine.

**Endemic** Usual frequency/constant presence of disease occurrence. The habitual presence of disease or the infectious agent within the given geographic area; may also refer to the usual prevalence of a given disease within such area.

**Endoderm** The inner tissues of an organism.

**Endogenous budding** Inward development from the germinal layer of a hydatid resulting in the formation of a daughter cyst or brood capsule.

**Endophagic** Preferring to feed indoors.

**Endophilic** Preferring to rest indoors.

**Endotoxin** Toxin released when certain bacterial species (especially the Gram negative rods) die. Symptoms not specific to the bacterial species (eg endotoxic shock in Gram negative rod septicaemias).

**Enteric Fever** Typhoid and Paratyphoid. Septicaemic diseases caused by *Salmonella typhi* and *Salmonella paratyphi*.

**Enterobius vermicularis** A small nematode parasite of humans. Also known as pinworm, threadworm or seatworm. Infection often associated with anal pruritis, especially in children.

**Envenomation** The injection of a venom into the tissues by teeth, spines, miniature harpoons (nematocysts) or drills. c.f. bite and sting.

**Environmental manipulation** Making temporary changes to the environment with the objective of reducing vector abundance.

**Environmental modification** Making permanent changes to the environment with the objective of reducing vector abundance.

**Enzyme** Usually a protein made by the body to make chemical reactions take place at a faster rate or to cause a colour change in a laboratory test.

**Eosinophilia** An increase in the number of eosinophils in the blood and associated with an allergic response or an invasive helminth infection.

**Eosinophilic enteritis** A disease in patients presenting with severe abdominal colic, evanescent small bowel obstruction and a peripheral blood eosinophilia. Zoonotic hookworms, e.g. *Ancylostoma caninum*, are believed to be the causative agent, as described by Dr John Croese and others from northern Queensland.

**Epidemic** Unusual frequent occurrence of disease in the light of past experience. The occurrence in a community of region of a group of illness (or an outbreak) of similar nature, clearly in excess of normal expectancy and derived from a common or a propagated source. The number of cases indicating presence of an epidemic will vary according to the infectious agent, size and type of population exposed, previous experience or lack of exposure to the disease, time and place of occurrence. Epidemicity is thus relative to usual frequency of the disease in the same area, among the specified population, at the same season of the year. A single case of a communicable disease long absent from the population (as Smallpox, in Boston) or first invasion by a disease not previously recognised in the area (as American Trypanosomiasis, in Arizona) is to be considered sufficient evidence of an epidemic to require immediate reporting and full investigation.

**Epidemic polyarthritis** Disease common in Australia and caused by the Ross River Virus, an arbovirus transmitted by mosquitoes.

**Epidemiology** A science concerned with describing the pattern of occurrence of disease in a population and determining the factors which influence disease prevalence and distribution with the ultimate objective of providing

the basis of control of prevention.

**Epidermoid carcinoma** Squamous cell carcinoma; cancer of squamous epithelium.

**Epidermophyton** Genus of dermatophyte fungi associated with tinea or ringworm in humans.

**Excretory pore** An opening of the excretory system, normally situated on the ventral side at the anterior part of the body (e.g. in trematode miracidia).

**Etaquine** See also Tefanoquine. An anti-relapse drug used to prevent relapses in malaria due to *Plasmodium vivax* or *P. ovale*. When used with a chemotherapeutic drug such as chloroquine for these malaria species, it thus can achieve a radical cure.

**Excision** Removal of tissue.

**Excision biopsy** A biopsy of a lesion for the purposes of diagnosis in which the whole lesion is excised.

**Exit traps** Devices typically placed over doors and windows of houses or animal shelters to catch mosquitoes leaving these buildings.

**Exogenous budding** Outward or external development from the germinal layer of a larval cestode.

**Exophagic** Preferring to feed outdoors.

**Exophilic** Preferring to rest outdoors.

**Exotoxin** A toxin secreted by certain bacterial species or strains into the surrounding medium during growth. Often cause clinical features very specific to the disease (eg tetanus, diphtheria, cholera). Exotoxins secreted by enteric organisms often termed 'enterotoxins'.

**Expired air resuscitation** The use of expired (used) air blown from a rescuer into the airway and lungs of an unconscious victim who is not breathing, sufficient to sustain his life.

**External cardiac compression** Compression of the outside of the sternum and ribs, effectively emptying and filling the heart to push blood through arteries to supply oxygen to the body- particularly to the brain.

# F

**False negative** A negative test result for a condition that is, in fact, present.

**Family** A taxonomic group of similar, related, animals. The taxonomic group that is below Order, but above Genus.

**False hookworm** *Ternidens deminuus*, an intestinal nematode of monkeys in the Old World tropics and recorded from humans in Southern Africa and Mauritius. One of the nodular worms.

**False positive** A positive test result for a condition that is not, in fact, present.

***Fasciola hepatica*** The common liver fluke. In tropical regions this species is replaced by *F. gigantica*. Like all trematodes, their intermediate hosts are aquatic snails. Infection occurs when the infective metacercariae are ingested on vegetation in swampy areas. Normal final (definitive) hosts are sheep, cattle and various wild animal species. Humans can acquire fascioliasis if they eat contaminated water cress etc.

***Fasciolopsis buski*** The intestinal fluke. Definitive hosts are pigs and humans. Metacercariae encyst on aquatic plants such as water chestnuts in south east Asia.

**Feeding habits** Habits determining the times and places of feeding and the sources of blood meals for mosquitoes.

**Fievre Boutonneuse** Wide-spread spotted fever. Tick-borne and caused by *Rickettsia conori*.

**Filariasis** A parasitic infection caused by filarial nematode worms, such as *Wuchereria bancrofti* and *Brugia malayi*, causing a variety of illnesses. See also elephantiasis and onchocerciasis.

**Filariform** A long, slender, simple and muscular structure as in Strongyloidea.

**Fire jelly** See Morbakka.

**Fire weed** The colloquial term for *Lytocarpus philippinus*.

**Fire coral** The colloquial name for *Millepora*.

**Flinder's Island Spotted Fever** A tick-borne disease found on Flinder's Island, north of Tasmania. Zoonotic and caused by *Rickettsia honei*.

**Fluke** Generally refers to helminth in the Class Trematoda or trematodes.

**Fly** A two winged insect of the Order Diptera. Includes the housefly and the myiasis - causing flies. Also includes the mosquitoes and the tsetse flies.

**Focus** The origin or source of an infection or vector population.

**Fugu** The term applied to mild puffer fish poisoning causing mild paresthesiae around the lips after eating fish prepared by a special cook. Accidental overdose may, and does, cause human fatality in Japan.



**Fungus** Eucaryotic (nucleated) organisms, reproducing by means of spores and have no chlorophyll, e.g. mushrooms, toadstools, moulds.

# G

**Gametes** Sperm or ova.

**Gametocyte** These are sexual forms of the malarial parasite that develop within red blood cells. The male gametocytes are known as microgametocytes and the female gametocytes are known as macrogametocytes.

**Gas embolism** A blockage of a blood vessel by air or gas, usually caused when a diver ascends too rapidly, when the air expands, causing rupture of the lung tissues which then allows the air into the blood stream. It often results in death due to air bubbles occluding the blood vessels supply the brain (cerebral gas embolism).

**Gastric cirri** Hair-like appendages in the stomach of most cubozoan jellyfish. They contain nematocysts and aid in digestion.

**Gastrovascular cavity** The digestive system of the cnidarian, consisting of the stomach and its connecting canals which perform a similar task to vascular system of higher orders.

**Gene** The functional unit of heredity. A segment of DNA (or RNA in certain viruses) that encodes a single protein or confers a specific trait.

**Gene expression** The full use of the information in a gene via transcription and translation leading to production of a protein.

**Genera** Comprising similar species; a rank between Family and Species.

**Genome** The total genetic information present in a cell or organism.

**Genus** (pl. genera) The taxonomic category below Family, but above Species. A taxonomic grouping of closely related species. A category of biological classification, see genera and Taxonomy.

***Giardia duodenalis*** An intestinal flagellate protozoa of humans and other animals causing giardiasis which may often present as a long-lasting, chronic malabsorptive diarrhoea. Syn. include *G. intestinalis* and *G. lamblia*.

**Glucose-6-phosphate-dehydrogenase (G6PD) deficiency** A deficiency in the enzyme G6PD resulting in a haemolytic anaemia. This haemoglobinopathy contraindicates the use of the 4-aminoquinolines such as primaquine for the radical treatment of benign tertian and ovale tertian malaria.

**Gonad** A group of male or female reproductive cells, which in jellyfish often line the sides of the stomach, but may extend through the bell of a jellyfish in the most mature specimens, especially the chirodropids.

***Gonionemus*** A small hydroid found around the world. It is usually innocuous, but in one small area of the northern Honshu island of Japan, and in a similar area on the opposite side of the Sea of Japan around Vladivostock, a sting causes severe systemic symptoms very similar to the Irukandji syndrome. Similar to Irukandji stings, *Gonionemus* stings occur in epidemics with more in some years than others. It has not caused a proven death, although some unproven deaths have been claimed in the past.

**Gonorrhoea** A sexually transmitted disease caused by the Gram negative diplococcus, *Neisseria gonorrhoeae*

**Gonococcus** *Neisseria gonorrhoeae*.

**Gonotrophic stage** The condition of female mosquitoes during blood ingestion, ovarian development, leading to oviposition.

**Grade** Estimate of the degree of malignancy of a neoplasm.

**Gram stain** Stain developed in 1884 by Hans Christian Gram, whereby Gram positive bacteria stain purple while Gram negative bacteria stain red.

**Granuloma inguinale** Donovanosis.

**Gubernaculum** A cuticular thickening of the dorsal wall of the spicular pouch in nematodes.

**Guinea worm** *Dracunculus medinensis*.

# H

**Haemorrhage** Bleeding; blood loss.

**Hair jellyfish** The Australian colloquial term for *Cyanea* - also known as Lion's Mane in many other countries.

**Halofantrine** US Army discovered antimalarial related to mefloquine, used to kill blood parasites, especially in the treatment of severe malaria due to *Plasmodium falciparum*

**Hantavirus** Also known as Four Corners virus. A rodent virus from the white-footed deer mouse of the USA. Causes severe respiratory disease of humans.

***Hapalochlaena* spp.** Usually known as the blue-ringed octopus, a bite from this cephalopod can cause respiratory paralysis (but not unconsciousness) within 30 minutes of a painless bite by the beak on the underside of this small octopus. It is normally some 8-11cm across, and a dull brown colour. However, when irritated (eg. by children playing with it) attractive blue rings appear, and a bite may occur. Rapid (within 10 minutes) onset of progressive muscle weakness, with speech and respiratory difficulty, dysphagia and visual disturbance occur; respiratory failure may occur. There have been two Australian deaths. EAR can prevent death from respiratory failure.

**Heat** An effective analgesic for some deeply-injected envenomations including stonefish, stingray and other venomous-spined fish.

**Helminths** Round worms, tapeworms and flukes.

**Hendra virus** Virus of Flying Foxes (Fruit Bats) in Australia. Can infect horses and humans. Also known as the Equine morbillivirus.

**Hepatitis** Inflammation of the liver

**Hepatitis viruses** The most common causes of viral hepatitis are those caused by the Hepatitis A, B, C, D, E and G viruses. Hepatitis F virus has been described but is a doubtful entity. Other viruses which can cause hepatitis include the Epstein-Barr Virus, cytomegalovirus, and the Yellow Fever virus.

**Hepatozoon** A genus of tick-borne apicomplexan protozoa infecting a range of animal species including lizards and snakes but not humans.

**Herd immunity** A level of immunity found in a community of animals/humans and related to a particular infection to which the community has been exposed.

**Herpes simplex virus** Causative virus of genital herpes and herpes labialis or cold sores.

**Herpes zoster virus** Causative virus of chicken pox and shingles.

**Heterophil antibody** Antibody which reacts with an antigen which has not stimulated its production (i.e. a cross-reacting antibody).

**Hexacanth** A larval stage of the tapeworm having six hooks.

**Histoplasmosis** A mycotic disease caused by the dimorphic fungi *Histoplasma capsulatum* and *H. duboisii*. The former primarily affects the lungs and is acquired by inhalation of spores in bat droppings (often in caves) and the latter affects the skin and is restricted to West Africa.

**HIV (Human immunodeficiency virus)** The name of the causative agent of AIDS.

**Holoendemic** Perennial transmission of a high degree resulting in a significant immune response in all age groups, particularly in adults.

**Hookworm** A parasitic nematode found in the intestines of humans and animals. They are usually transmitted by infection with the third stage filariform larva orally or through the skin. Examples include *Ancylostoma duodenale* and *Necator americanus*. See also associated diseases such as eosinophilic enteritis and cutaneous larva migrans.

**Hormone** A chemical produced in the body by endocrine glands and carried in the blood to other organs where the hormone causes processes to change in the target organ. A chemical messenger.

**Host** A human or other living animal, including arthropods, affording under natural conditions subsistence or lodgement to an infectious agent. Some protozoa and helminths pass through successive stages in alternate hosts of different species. Hosts in which the parasite attains maturity or passes its sexual stage are primary or definitive hosts; those in which the parasite is in a larval or asexual state are secondary or intermediate hosts

**Host preference** The preference of a mosquito (or other parasite or micropredator) for a particular type of host, human or animal. (To be distinguished from simple readiness to feed on a given type of host when no other is available).

**Host range** Array of hosts susceptible to infection with an agent.

**Hydatid** Larval stage of *Echinococcus*, generally containing daughter cysts with a large number of protoscolices.

**Hydatid sand** Free protoscolices lying inside a hydatid.

**Hydroid** A plant-like member of the class Hydrozoa.

**Hydrophiidae** The Family name of sea snakes (but not the kraits).

**Hydrozoa** The taxonomic class including the plume-like hydroids, hard stinging "corals", small jellyfish with bells (i.e. bell-shaped bodies), and members of the order Siphonophora which may be buoyed up by gaseous floats.

**Hyperendemic** Intense, seasonal transmission where the immunity is insufficient to prevent the effect of diseases on all age groups.

**Hypersensitivity** Extreme sensitivity to any protein, over and above its normal effect. It usually occurs in certain sensitive people after more than one exposure to the offending protein.

**Hypertension** High blood pressure - usually above 150/95mm Hg.

**Hypnozoite** The latent liver forms in *Plasmodium vivax* and *P. ovale* which give rise to clinical relapses of malaria by invasion of the circulating erythrocytes. The hypnozoites are not eliminated by the usual chemotherapeutic drugs used in the treatment of malaria (chloroquine, quinine etc) and to achieve a radical cure in these relapsing malarials an

antirelapse drug must be added to the treatment regime (e.g. primaquine or etequine/Tefanoquine).

**Hypoendemic** Little transmission, effect on general population not important.

**Hypoxia** Low oxygen saturation (levels) in the body.

**Hypotension** Low blood pressure - usually with the diastolic (the lower level) below 60 mm Hg., and sufficient to cause symptoms (eg. dizziness/collapse).

# I

**Iatrogenic** Describes any adverse condition resulting from medical treatment.

**Ice** An excellent analgesic to stop the skin pain of many envenomations, especially those of jellyfish stings. It is usually less effective than heat for the treatment of stonefish, stingray and other venomous-spined fish envenomations.

**Icterus** Jaundice

**Idiopathic** No known cause.

**Immune person/animal** A person or animal that possesses specific previous antibodies or cellular immunity as a result of previous infection or immunisation, or is so conditioned by such previous specific experience as to respond adequately with production of antibodies sufficient to prevent illness following exposure to the specific infectious agent of the disease. Immunity is relative; an ordinarily effective protection may be overwhelmed by an excessive dose of the infectious agent or an unusual portal of entry.

**Immunity** The body's ability to resist and overcome infection and cancer.

**Immunoglobulins** Body proteins that act as antibodies.

1. IgG: The immunoglobulin that can be measured in the serum approximately two weeks after a challenge by an antigen. Can cross the placenta from mother to foetus.

2. IgM: The immunoglobulin that can be measured very soon after a challenge by an antigen. The level returns to a non-measurable level very quickly and so this measurement is useful as a test for recent envenomation (or illness). Cannot cross the placenta from mother to foetus. Presence in a neonate therefore indicates infection of the body.

3. IgE: Reaginic antibody; immunoglobulin found in association with allergic or homocytotropic responses.

4. IgA: Secretory antibody; immunoglobulin found in nonvascular fluids, such as the saliva, bile, aqueous humor, synovial fluid etc.

**Immunosuppressed** A state of the body where the immune system defences do not work properly. This can be the result of illness or the administration of certain drugs (commonly ones used to fight cancer).

**Immunotherapy** A type of cancer treatment which involves stimulating the body's immune system.

**Inapparent infection** The presence of infection in a host without occurrence of recognisable clinical signs or symptoms. Inapparent infections are only identifiable by laboratory means. A synonym would be subclinical infection.

**Incidence** Number of new cases of a disease or deaths within the specified period of time and population.

**Incidence rate** A quotient, with the number of cases of a specified disease diagnosed or reported during a stated period of time as the numerator, and the number of persons in the population in which they occurred as the denominator.

**Inclusions** Particles in the cytoplasm or nucleus of cells infected with certain viruses or bacteria such as the chlamydiae.

**Incubation period** The time interval between exposure to an infectious agent (eg, bite) and appearance of the first sign or symptom of the disease in question.

**Infected person** A person who harbours an infectious agent and who has either manifest disease or inapparent infection. An infectious person is one from whom the infectious agent can be naturally acquired.

**Infection** The entry and development or multiplication of an infectious agent in the body of humans or animals. Infection is not synonymous with infectious disease; the result may be inapparent or manifest. The presence of living infectious agents on exterior surfaces of the body, or upon articles or apparel or soiled articles, is not infection but contamination of such surfaces and articles.

**Infectious agent** An organism, chiefly a microorganism but including helminths, that is capable of producing infection or infectious disease.

**Infectious disease** A disease of humans or animals resulting from an infection.

**Infectivity** The quality of being infectious; infectiousness.

**Infestation** An invasion by animal ectoparasites. Infestation is used more for gross parasites on the surface of the body that produce mechanical effects; infection of parasites within the body.

**Inflammation** The condition into which tissues enter as a reaction to injury. Usually manifested by heat, pain and swelling.

**Insecticide** Chemical that kills insects and other arthropods, such as mites. Chemicals that kill ticks and mites often termed acaricides.

**Insecticide resistance** The ability of a mosquito or other insect to survive contact with an insecticide in quantities that would normally kill a mosquito of the same species.

**Instars** Stages of insect growth and development. In mosquitoes there are four larval instars, each terminating with the shedding of the cuticle.

**Integrated control** A combination of biological and insecticidal methods of control, e.g. the introduction of predacious fish to breeding places which are also sprayed with insecticides that have minimum effect on the fish.

**Interferon** An antiviral chemical secreted by an infected cell which strengthens the defence of nearby cells not yet infected.

**Interleukin-2** A substance produced by T-lymphocytes that stimulates activated T-lymphocytes and some activated B-lymphocytes to proliferate. Also known as T-Cell growth factor.

**Intermediate host** An animal or human host where the juvenile stages of the parasite undergo an asexual reproductive phase of development but not reaching adult stage.



**Interval** Time between paroxysms in malaria.

**Intravenous** Injected into or delivered through a needle in a vein.

**Invasiveness** The ability of a microorganism to enter the body and to spread more or less widely throughout the tissues. The organism may or may not cause clinical symptoms.

**In vitro** In an artificial environment.

**In vivo** In a living body.

**Irukandji** A jellyfish and a syndrome name derived from the name of a tribe of Aboriginals near Palm Cove, Cairns in north Queensland where many jellyfish stings with severe systemic symptoms were first reported (and still occur).

**Ischaemia** Lack of tissue oxygen and nutrients usually due to impaired (arterial) blood flow.

**Isolation** The separation, for the period of communicability, of infected persons or animals from others, in such places and under such conditions as will prevent the direct or indirect conveyance of the infectious agent from those infected to those who are susceptible or who may spread the agent to others. Can also be used in relation to microorganisms (e.g. a bacterial species isolated from the patient).

**Ixodid** Hard tick (ie tick with a hard dorsal scutum) belonging to the family Ixodidae. Includes amongst others, the genera *Amblyomma*, *Dermacentor*, *Ixodes*, *Rhipicephalus* and *Hyalomma*.

# J

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**Japanese encephalitis** A flavivirus, related to Murray Valley virus (see Australian Encephalitis). Rice paddy-breeding Culicine mosquitoes, *Culex tritaeniorhyehus*, often transmit the disease. Mosquitoes are largely zoophilic. Occasionally *Aedes* spp and Anophelines implicated in transmission. Disease consists of prodrome, encephalitis and recovery (or death on average in 7%). Affects mostly children less than five years of age and leaves sequelae. A vaccination is available.

**Jaundice** Deposition of bilirubin in the skin giving it and the sclerae of the eyes a yellow colour. Indicates a hepatitis.

**Jet lag** A feeling of disorientation or tiredness which follows a long air journey. Jet lag is usually most pronounced when travelling from West to East over areas with time zone differences.

**Jimble** Colloquial term for *Carybdea rastoni*.

# K

**Kala azar** See visceral leishmaniasis.

**Kaposi's sarcoma** A cancer or tumour of the blood and/or lymphatic vessel walls. It usually appears as blue-violet to brownish skin blotches or lumps. Before the appearance of AIDS, it was rare in the developed world. AIDS-associated Kaposi's sarcoma is much more aggressive than the earlier form of the disease and is associated with Human Herpes Virus 8.

**Katayama Syndrome** A syndrome characterised by allergic symptoms and involving the respiratory tract (i.e. fever, cough, rash and marked eosinophilia) sometimes seen in patients who have had exposure to a large number of schistosome cercariae, especially *Schistosoma japonicum*, sometimes *S. mansoni*, rarely *S. haematobium*. Syndrome occurs during the invasive stage of schistosomiasis from the time of cercarial penetration of the skin to the time of early egg laying in the veins.

**Keratitis** Inflammation of the cornea.

**Keratoconjunctivitis** Inflammation of the cornea and the conjunctiva.

**Kingdom** The highest taxonomic level. See Taxonomy.

**Kinetoplast** Small highly staining body at the base of the flagellum of flagellate protozoa.

**Kraits** Sea kraits (Genus *Laticauda*) are similar to, and can be regarded as sea snakes, although they are more heavily-built and their nostrils are not situated on the upper surface of the snout. *Laticauda colubrina* (the banded sea snake) and *Laticauda laticaudata* (the black-banded sea snake) are the most common in Australia.

**Kwashiorkor** Severe protein deficiency disease seen in malnourished children.

# L

**L1, L2, and L3** Immature developing (L1 and L2) and infective (L3) stages of nematode larvae, e.g. filariasis, hookworm etc... In filariasis, after an infective blood meal, microfilariae exsheath, penetrate the stomach wall and pass into the haematocoel, from where they migrate to the thoracic muscles of the mosquito. In the thorax, the small larvae become more or less inactive, grow shorter but considerably fatter and develop, after 2 days, into "sausage-shaped" forms (L1). They undergo two (2) moults and the resultant third stage larvae (L3) become active. This is the infective stage and is formed some 10 days or more after the microfilariae have been ingested with a blood meal.

**Lability** Chemical instability.

**Larva currens** A rash rather like that of cutaneous larva migrans resulting from penetration of the filariform larva of *Strongyloides stercoralis* in the skin around the anus and buttocks, as part of autoinfection.

**Larval habitat** The type of aquatic environment in which mosquito larvae are typically found.

**Larval survey** The process of searching for mosquito larvae in a defined area. Larvae are collected and taken to the laboratory for identification and enumeration.

**Larvorous fish** Fish species which feed preferentially on mosquito larvae. They may contribute significantly to the reduction of vector densities.

**Lassa Fever** A serious viral haemorrhagic fever of humans harboured by small rodents such as the multimammate mouse of West and Central Africa.

**Latent stage** Resting or inactive stage found in some viral infections such as the herpes viruses.

**Latent period** The time between initiation of infection and the first shedding of the agent.

**Laticaudidae** Family name for sea snake kraits.

**Latrodectus** A genus of spiders which includes such venomous species as the black widow spider of the USA, the red back spider of Australia and the button spider of South Africa.

**Leaf-crown** The cuticular extension to fine pointed processes in the nematodes which have no lip; extension from the rim of the mouth called "external leaf-crown", from the rim of the buccal capsule called "internal leaf-crown" as in Strongyloidea.

**Leech** A blood-feeding annelid worm.

**Legionnaire's disease** Infection by the Gram negative rod, *Legionella pneumophila* and other species of the Genus. Often presents as an atypical pneumonia. Outbreaks have been reported from various countries.

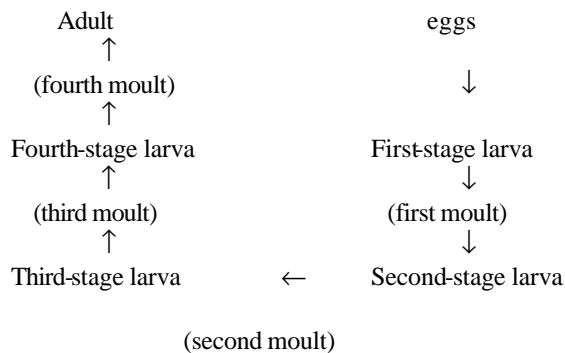
**Leishman-Donovan Bodies** (LD Bodies) Amastigote stages of protozoa of the genus *Leishmania*. These stages in a skin biopsy, bone marrow or spleen aspirate are diagnostic of Leishmaniasis.

**Leptospirosis** A zoonosis. It is an acute, febrile, septicaemic disease caused by the *Leptospira interrogans* which has more than 200 serovars. The disease is characterised by a broad spectrum of clinical manifestations including fever, chills, headache, conjunctivitis and muscular pains. The disease may be subclinical in mild cases but jaundice and renal failure are observed in severe cases. Includes Weil's Disease. Can result in an aseptic meningitis.

**Leucocyte** A white blood cell.

**Life cycle** The stages of development through which a plant or animal passes during its life. For mosquitoes these stages are: egg, larva, pupa, adult.

Normally, development of nematodes included four moults and five successive stages as follows:



Generally, there are two types of life cycle for nematodes: direct and indirect types.

1. Direct Life Cycle: requires no intermediate host, after hatching from the eggs the larvae develop in the open from free-living to infective stages and gain access to the definitive host by mouth or penetration through skin.

2. Indirect Life Cycle: requires one or two intermediate hosts for development to infective stage.

**Light traps** A mechanical trap which use a combination of light and/or carbon dioxide to attract and trap adult mosquitoes, e.g. Centres for Disease Control and Prevention (CDC) Light Trap.

**Lionfish** See Scorpaenidae.

**Lion's mane** A colloquial term for *Cyanea* - used in many countries other than Australia.

**Lip** An extension of cuticle around the mouth of nematodes; there may be three, one dorsal and two subventral as in Ascaroidea or two as in Spiruroidea or absent as in Strongyloidea and Filarioidea.

**Little mauve stinger** Colloquial term for *Pelagia noctiluca*.

**Loa Loa** Filarial nematodes transmitted by the horse fly (Chrysops) in west central Africa. Causes loiasis, characterised by fugitive, subcutaneous (Calabar) swellings.

**Louse** Insects belonging to the orders Anoplura (sucking lice) or Mallophaga (biting/feather lice). Human lice include the Head louse (*Pediculus humanus capitis*), the body louse (*P.h.corporis*) and the pubic louse (*Phthirus pubis*).

**Lung flukes** Trematode worms infecting the lungs of humans and other crab-eating mammals. Belong to the genus *Paragonimus* and are found in parts of Africa, Latin America, Asia and SE Asia.

**Lyme Disease** A zoonotic disease caused by the spirochaete *Borrelia burgdorferi* and other species of the genus. Common in Europe and the USA and transmitted by Ixodid ticks.

**Lymphadenopathy** Enlargement of the lymph nodes. Swelling of the body lymph glands which is sometimes painful, especially after envenomation. Lymph glands when swollen may be almost anywhere in the body, but are more easily felt in the neck, under the arms (axillae) and in the groins.

**Lymphogranuloma venereum (LGV)** A tropical sexually transmitted disease caused by *Chlamydia trachomatis* serotypes L1, L2 and L3.

**Lymphoma** A malignant neoplasm of lymphoid tissue.

**Lyssa virus** A group of rhabdoviruses closely related to the rabies virus. The Australian Bat Lyssa virus is found in flying foxes (fruit bats) and can cause a rabies-like disease in humans. The disease should be handled as for rabies and can be prevented by using rabies vaccine.

***Lytocarpus philippinus*** Commonly known as fireweed, *Lytocarpus* is a stinging hydroid (hydrozoan) that grows on pilings, rocks and overhangs in tropical and sub-tropical areas of the world. Skin contact causes an itchy vesicular rash.

# M

**Malignant** Ability of cancer to invade local tissue and to spread to distant sites in the body.

**Malaria** A protozoan disease of humans caused by blood parasites of the species, *Plasmodium falciparum*, *P. vivax*, *P. ovale* or *P. malariae* and transmitted by anopheline mosquitoes. *P. falciparum* is most likely to cause death, if untreated, and can also be a great mimicker in its presentation. Malaria should be suspected in anyone with a fever or who is otherwise unwell and has returned from a malarious area.

**Malaria prophylaxis** Measures taken for protection against malaria, e.g. administration of a drug and personal protective measures that prevent a person from becoming infected with the disease.

**Mamba** Highly venomous African elapid snakes. Include the green mamba and the black mamba.

**Mansonia** A genus of mosquitoes, some species of which can be involved in the transmission of human filariasis due to *Brugia malayi* and *Wuchereria bancrofti*.

**Mansonella** A genus of filarial nematode worms which can infect humans in Africa and South America. Transmitted by biting midges belonging to the genus *Culicoides*. Important species infecting humans include *M. ozzardi*, *M. perstans* and *M. streptocerca*.

**Manubrium** The tube between the stomach and the mouth of a jellyfish- equivalent to the oesophagus in humans.

**Marburg Disease** A serious African viral haemorrhagic fever harboured by monkeys. Named after the city of Marburg in Germany where a serious outbreak occurred amongst laboratory workers handling the tissues of African Green (Vervet) monkeys.

**Mebendazole** An effective and safe benzimidazole anthelmintic with a wide spectrum of action against intestinal nematodes including hookworms, *Ascaris*, *Enterobius* and *Trichuris*.

**Medusa** The adult, recognisable stage of a free-swimming jellyfish.

**Mefloquine** An antimalarial related to quinine, tetracycline and halofantrine used to suppress blood parasites, especially chloroquine resistant strains of *Plasmodium falciparum*. There has been increasing resistance to mefloquine reported in malaria due to *Plasmodium falciparum*.

**Mehliss's glands** A unicellular gland in cestodes, which encircles the ootype. Its function is not known.

**Melanoma** Any tumour of melanin-pigmented cells. Usually has highly malignant properties.

**Melioidosis** An infectious disease caused by a soil bacterium, *Burkholderia pseudomallei*, seen in many areas of the tropics and is particularly prevalent during the wet season. The illness may present in a number of ways including life threatening acute septicaemia as well as pneumonia and chronic suppuration, which has a lower mortality.

**Meningococcus** *Neisseria meningitidis*.

**Merozoites** A stage of the life cycle of the malarial parasite.

**Mesoendemic** The disease is found among small, rural communities with varying intensity depending on local circumstances.

**Mesoglea** The jelly part of a jellyfish - the thickened substance between the epidermis and gastrodermis that gives the jellyfish its shape.

**Metaplasia** Change of a mature type of cell in a tissue to another mature type of cell usually present in another tissue; e.g., development of squamous epithelium in the trachea among the normal respiratory epithelium = squamous metaplasia.

**Metastasis** The spread of cancer cells through the blood, lymphatics or directly and establishment of these new groups of cells at locations distant from the original cancer.

**Metazoa** That division of the animal kingdom which embraces all animals whose cells become differentiated to form tissues. It includes all animals except the protozoa.

**Metronidazole** An antibiotic used widely for anaerobic bacterial infections (including pseudomembranous colitis) and also for such protozoan infections as giardiasis, trichomoniasis and amoebiasis.

**Micrometer** A unit of measurement. 1  $\mu\text{m}$  = 1 thousandth of a mm.

**Milleporina** Known by the colloquial term of Fire coral, it is not a true coral, although it is part of the reef-building community. It has a smooth feel but when touched may cause severe burning pain. The skin may then develop a severe raised, itchy rash which may suppurate and produce localized pus, or even skin death (necrosis).

**Mixed tumour** A neoplasm with a number of different cell types undergoing cancerous change.

**Mollusc** Invertebrates such as snails which mostly have a shell. Includes the octopus.

**Molluscicide** A substance (or chemical) which kills molluscs, such as snails.

**Monkey pox** A pox viral disease of monkeys in Central Africa which can infect humans.

**Monkey B virus** A herpes virus of monkeys that can infect humans, usually through handling monkey tissues at autopsy or in the laboratory.

**Morbakka** The colloquial name for a number of large box-jellyfish with a single tentacle in each corner. There are probably a number of species that are grouped under this name. The sting causes a burning pain to the skin and rarely, a mild Irukandji syndrome. See also: Moreton Bay carybdeid, and Fire jelly.

**Morbidity** Something that affects the normal body functioning, but not causing death. The condition of being diseased or morbid or sick.

**Moreton Bay carybdeid** A morbakka that is often caught in the Moreton Bay area, just north of Brisbane, Queensland. See also Fire jelly.

**Morphology** The type of form or structure of a plant or animal.



**Mortality** The effects of something resulting in death. The quality of being mortal or dead. The death rate; the ratio of total number of deaths to the total population.

**Mortality rate** The percentage that die within a specified period of time.

**Mosquito repellent** Any substance producing a negative response in mosquitoes, causing them to avoid a close approach (such as alighting on the skin of a host animal or entering a treated room). (See also DEET).

**Multilocular hydatid** Larval stage of *Echinococcus multilocularis* in which exogenous development occurs resulting in infiltration of tissues.

**Murine typhus** A zoonotic febrile disease caused by the rodent bacterial species, *Rickettsia typhi*, and transmitted by fleas of the genus *Xenopsylla*.

**Musca** A genus of flies (Diptera) which includes the housefly, *M.domestica*, a potential mechanical vector of enteric viral, bacterial and parasitic pathogens. Can also mechanically transmit trachoma.

**Muscle pump** The contraction and relaxation of the limb muscles that helps pump the low pressure venous blood from the extremities back to the central collecting system.

**Mycoplasma** A genus of cell wall defective bacteria which includes the cause of primary atypical pneumonia, *Mycoplasma pneumoniae*.

**Myiasis** Infection of mammals (including humans) by certain dipterous larvae (maggots). Various clinical forms recognised, including cutaneous myiasis, intestinal myiasis, ophthalmomyiasis, urogenital myiasis and sanguivorous myiasis.

# N

**Nairobi eye** An acute inflammation of the eye resulting from an irritant secreted by beetles of the genus *Paederus*, getting onto the eye.

**Nanometer** A unit used in electronmicroscopy and virology. 1 nm = 1 thousandth of a  $\mu$ m.

**Natural history of di sease** The progressive development of a disease that runs its course without treatment.

1. Stage of susceptibility
2. Stage of presymptomatic
3. Stage of clinical disease
4. Stage of disability/resolution

***Necator americanus*** See hookworm.

**Neck** The connecting tissues between the scolex and strobila of a tapeworm. This part is unsegmented.

**Negri bodies** Inclusions found in the cytoplasm of brain neurons in rabies.

**Nematocyst** The stinging cells present on the tentacles (and the bell of some species) of cnidarian. Each nematocyst consists of an coiled tube which may be bathed in venom. When the trigger on the outside of the nematocyst is touched, the tube rapidly inverts itself firing rather like a harpoon into the tissues of the prey. Venom onthe outside of this tube is thus deposited in the tissues, and possibly into blood vessels during this trajectory. Finally, in some specialised nematocysts venom is then discharged through the open end of this thread tube and is deposited in the tissues o f the prey.

**Nematodes** Unsegmented worms having a gut and a body cavity (pseudocoel). Are round in transverse section. Many species are parasitic.

**Neoplasm** New or abnormal uncontrolled growth.

**Neurone** The cell of a nerve responsible for transmission of the signal along the nerve fibre.

**Nipah virus** Virus first identified from the village of Nipah in Malaysia. Carried by flying foxes (fruit bats). Can infect pigs and humans.

**NMR** Nuclear magnetic resonance. A technique for making images of the organs of the body using the way protons resonate in a magnetic field.

**Nodular worms** Nematodes which live in nodules in the wall of the large intestine. Belong to the genus *Oesophagostomum*. Infect a range of mammal species including humans.

**Norwegian scabies** A severe form of scabies presenting often in immunosuppressed individuals, often presenting with a generalised dermatitis, extensive scaling and occasionally vesiculation and crusting. The severe itch may be reduced or absent. Secondary infection can develop. See also Scabies.

**Nosocomial infection** Infection pertaining to a hospital or an infirmary.

**Notifiable Disease** An infectious or other disease required to be notified to the relevant State Government Authority for entry onto the Notifiable Diseases Register.

**Nucleic acid** Group of chemicals found in cells and which carry biochemical codes for heredity and day-to-day functioning of cells.

# O

**Ocellus** The "eye", present midway between the corners of cubozoan ("box") jellyfish. It is capable of distinguishing light and dark, and is probably responsible for evasive action by the jellyfish. Term ocellus also refers to the "simple" eyes of insects and spiders as opposed to their "compound" eyes.

**Oesophagostomum** A genus of nematodes that includes the nodular worms.

**Oesophagus** Structure attached to the oral cavity/mouth of an organism which connects to the rest of the digestive system. The oesophagus can be classified according to the shape and structure.

**Onchocerciasis** (Syn. "river blindness") A. disease caused by the parasitic filarial nematode *Onchocerca volvulus* (See also filariasis).

**Oncogene** A gene in a cancer cell that causes its growth to be uncontrolled. A regulatory gene that has changed and is responsible for uncontrolled growth.

**Oncologist** Doctor who specialises in treating cancer.

**Oncology** The study of cancer.

**Oncosphere** A hexacanth embryo of cestodes.

**Oocyst** Fertilised female cell (zygote) after the ookinete penetrates and encysts in the wall of the mosquito stomach. This cell undergoes division to produce sporozoites.

**Ookinete** Motile (mobile) stage of the malaria parasite resulting from fertilisation of the macrogametocyte by microgametocyte(s) in the mosquito gut. After passing through the gut wall, it becomes an oocyst.

**Ootype** The fertilising chamber where the ovum is fertilised by the spermatozoon.

**Operculum** A lid-like structure covering certain cestode and most trematode eggs.

**Opisthorchiasis** A disease caused by liver flukes from the *Opisthorchis* species, e.g. *O. viverrini* seen widely in southeast Asia. See also cholangiocarcinoma.

**Opportunistic infections** A variety of diseases which occur in some individuals who do not have healthy immune systems. These are microorganisms which do not usually cause diseases in a healthy individual. They are seen in AIDS patients and include *Pneumocystis carinii* pneumonia, massive or overwhelming herpes infections, atypical mycobacteria, toxoplasmosis or chronic or overwhelming candidiasis.

**Oral** Relating to the mouth. The area with the mouth opening.

**Order** The taxonomic term for a group, above Genus, but below Class. See Taxonomy.

**Ornithodoros** A genus of soft ticks (argassids or tampsans). Includes the species *O. moubata* that transmits relapsing fever caused by *Borrelia duttoni*.

*Ornithorhynchus anatinus* See Platypus.

**Outbreak of malaria** A sudden increase in the number of people sick with malaria in a particular area (village, town, district).

# P

**Pacific man-o'-war** The colloquial term for the multi-tentacled hydrozoan colony *Physalia physalis*, recently described on the eastern coast of Australia.

**Pandemic** A widespread epidemic which may affect large areas of the world.

**Papilloma** Benign epithelial neoplasm in which neoplastic cells cover finger-like processes of dermis. Also any benign epithelial neoplasm growing outward from an epithelial surface.

**Paralytic shellfish poisoning** Poisoning by saxitoxin, a toxin present in some shellfish, usually in tropical or subtropical seas. Symptoms of respiratory arrest, or brain involvement occur in some 8% of cases, resulting in death. Saxitoxin is related to tetrodotoxin.

**Parasite** A plant or animal which lives upon or within or upon another living organism at whose expense it obtains some advantage without compensation. By convention, human parasitology covers the study of the protozoa, helminths and arthropods infecting humans.

**Parasite density** The number of malaria parasites in a specified volume of blood.

**Parasitaemia** Parasites circulating in the blood stream.

**Parasitism** A type of association where one organism depends for metabolism on the other.

**Paratenic host** An intermediate host which becomes infected by consuming another intermediate host and in which the parasite does not develop any further than in the first intermediate host. Also called a "transport host".

**Parental** Administration, other than orally, of a substance e.g. intramuscular or intravenous.

**Paresthesiae** Tingling and burning in the skin frequently described as "pins and needles". It is caused by irritation of cutaneous nerves by a variety of causes including trauma and envenomation.

**Parous rate** The proportion of female mosquitoes that have laid eggs at least once. Use for age-grading a mosquito population.

**Paroxysm** Cyclic manifestation of acute illness in malaria, characterised by a rise in temperature with accompanying symptoms, usually caused by invasion of the blood by a brood of parasites released from RBC's.

**Pathogen** An organism or substance which caused diseases.

**Pathogenicity** Ability to cause disease.

**Pathologist** A doctor that specialises in the interpretation of changes in tissues.

**Pathology** The study of how disease changes the anatomy (histopathology-and histology) of tissues.

**Peak biting time** The period during which the biting cycle of a given mosquito species when the largest number of

females take blood meals.

**Pedulum (pl. pedalia)** The four flattened "corners" of cubozoan (box) jellyfish from which arise the tentacles -unlike other jellyfish where the tentacles arise from many, or any, areas of the bell.

**Pediculosis** A parasitic infestation of the head, the hairy parts of the body and the clothing by adult lice, larvae and nits (eggs), which often results in severe itching and excoriation of the scalp and body. Secondary infection can occur. Infesting agents include *Pediculus capitis*, the head louse, *P. humanus*, the body louse, and *Pthirus pubis*, the crab louse, which usually infest the pubic region, but may also infest the hair of the face, axillae and the body surfaces.

**Pelagia noctiluca** A very common jellyfish known as the little mauve stinger, which has occurred in severe 'swarms' in the Mediterranean Sea. The sting causes moderate skin pain, but may also cause systemic symptoms such as cough, sneezing, painful breathing and nasal catarrh. It has not caused death, but one severe case of potentially-fatal anaphylaxis occurred in the wife of the then Greek Prime Minister.

**Pelagic** The open sea (ocean) habitat of some animals.

**Pellagra** A syndrome resulting from niacin deficiency, associated with photosensitive dermatitis, mucous membrane inflammation, diarrhoea and psychiatric disturbances.

**Periodicity** Recurrence at regular intervals of symptoms in malaria, characterised clinically by paroxysms and resulting from the invasion of the blood by new generations of parasites. Periodicity may be quotidian, tertian, quartan or double quartan according to the intervals between paroxysms.

**Periodicity** Recurrence at regular intervals of symptoms in malaria, characterised clinically by paroxysms and resulting from the invasion of the blood by new generations of parasites. Periodicity may be quotidian, tertian, quartan or double quartan according to the intervals between paroxysms. Periodicity also used to refer to the cyclic appearance in the blood of microfilariae of *Wuchereria bancrofti* (nocturnal) and *Loa loa* (diurnal).

**Persistent Chronic Diarrhoea** Diarrhoea that begins acutely but lasts more than 21 days. The usual enteropathogens are *Shigella spp.*, *Salmonella spp.*, *Campylobacter jejuni*, *Yersinia enterocolitica*, *Capillaria philippinensis*, *Cryptosporidium*. Giardia can also be a cause.

**Person/vector contact** The number of times a person is bitten by a vector mosquito, normally expressed as the number of bites per person per night.

**Petechiae** Pin point haemorrhages.

**Peyer's patches** Group of lymphoid tissue in the small intestine, especially involved in typhoid infections.

**Phlebotomine** A group of biting flies commonly called sandflies including the genus *Phlebotomus*, sometimes vectors of leishmaniasis.

**Phylum** The taxonomic group below a Kingdom, and above a Class. See Taxonomy.

**Physalia** A siphonophore or hydrozoan colony that is usually regarded as a jellyfish by non-biological people. It has a float, rather than a bell, and the tentacle(s) hang beneath. There are two main varieties:

1. *Physalia utriculus*. A single-tentacled species common in the warmer waters of the world, and especially common on the eastern seaboard of Australia where it causes some 10,000-odd stings each summer. No deaths have ever been

reported, and usually it causes mild-to moderate skin pain and possibly some aching pains in the draining lymph glands in the leg or armpit.

2. *Physalia physalis*. The multi-tentacled species found world-wide, but commonly on both side of the North Atlantic. Stings are common on the eastern coast of the United States and have now caused 3 deaths as well as many severe systemic symptoms. Specimens may have a float length of up to 25cm with tentacles up to 30m in length. Some severe systemic symptoms resemble a modified Irukandji syndrome with painful breathing, muscle cramps, anxiety and sweating.

**Pinta** A nonvenereal tropical treponemal disease similar to yaws and caused by *Treponema pertenue*.

**Piroplasms** Apicomplexan protozoa of the genus *Babesia*. Transmitted by Ixodid ticks and cause diseases such as red water fever in cattle and biliary fever in dogs. Rare human infections are recorded, especially in the splenectomised.

**Placebo** An inert substance with no actual effect, but administration of which may produce a beneficial effect to help a patient (eg pain relief).

**Platypus** The platypus, *Ornithorhynchus anatinus* is found in fresh water streams along the eastern seaboard of Australia from Cooktown, in northern Queensland, to Tasmania. It is an unusual looking, furry mammal with a bill like a duck, webbed feet with claws (used for digging burrows), and a paddle-like tail for swimming. The male has spurs on its hind legs connected to venom glands. Venom injection causes excruciating, long-lasting pain needing hospital admission and treatment. Although never fatal in humans, death has occurred in hunting dogs.

**Plasmid** Any self-replicating genetic component of a cell, e.g. bacteria, which is outside the chromosomes.

**Plerocercoid** The third stage larva of pseudophyllidean tapeworms, which has a solid body.

***Pneumocystis carinii*** A fungus, formally believed to be a protozoan, which may cause an atypical pneumonia in severely malnourished or immunologically compromised patients, e.g. AIDS patients.

**Poison** A toxin which introduced to the body via the gastrointestinal tract or the respiratory tract.

**Polyarthritis** Inflammation in several joints. Common features of a number of arboviral infections (e.g. Ross River virus and Barmah Forrest virus infections).

**Polymorphism** Wide varieties of form of a species.

**Polyp** The immature life-cycle form of a jellyfish (or other cnidarian) which is attached to a substrate. Tumour projecting from mucosal surface.

**Portuguese man-o'-war** The colloquial term used for the multi-tentacled hydrozoan colony of *Physalia physalis* common in the north Atlantic Ocean.

**Potentially Pathogenic Environmental Mycobacteria (PPEM)** The atypical mycobacteria. The commonest PPEM to cause human disease is the *Mycobacterium avium-intracellulare* complex. PPEM differ from *M. tuberculosis* in their source (environmental or zoonotic), rate of growth, temperature of growth and ability to produce pigment on culture. Mostly infect immunologically compromised humans and the disease caused by some species may be clinically indistinguishable from true human tuberculosis.



**PPD** (see Purified protein derivative)

**Praziquantel** A broad spectrum anthelmintic very effective against many human trematodiasis (including all forms of schistosomiasis) and some cestode infections (e.g. hymenolepiasis; cysticercosis).

**Preferred breeding sites** Sites suitable for egg-laying and satisfactory for all aquatic stages of development.

**Predictive Value Negative** The probability that a person with a negative test is free of the disease and is not a false negative.

**Predictive Value Positive** The probability that a person with a reactive test has the disease and is not a false reaction.

**Prepatent Period** Time of infection (bite) to the first finding of the organism (eg, malaria parasite) in the bloodstream, i.e. from the time of infection to time when first diagnostic stages can be detected.

**Prevalence** The number of cases of a disease or other condition existing for a given area or at a given time, for a given population. Prevalence includes both new (incidence) and existing instances of a disease.

**Prevalence rate** quotient using as the numerator, the number of persons sick or portraying a certain condition, in a stated population, at a particular time, regardless of when that illness or condition began, and as the denominator, the number of persons in the population in which they occurred.

**Primaquine** Used for radical cure of malaria and to prevent relapse. It is used to kill the liver stages of the malarial parasite. It also has the potential to be used as a causal prophylactic drug. This 8-aminoquinoline must be used with care or not at all in people who are G6PD deficient.

**Primary cancer** An original cancer still at the site at which it started to grow.

**Prions** Formally known as the "slow viruses". Prions are in reality transmissible abnormal proteins infecting the CNS. They cause such human diseases as Kuru, Creutzfeld-Jacob Disease (CJD), bovine spongiform encephalitis ('mad cow disease') – all of which are characterised by their extremely long incubation period.

**Proceroid** The second stage larva of pseudophyllidean tapeworms which bears six hooks near the posterior end.

**Prodrome** A premonitory symptom or precursor; a symptom indicating the onset of a disease.

**Prodromal period** Premonitory period; indicating the approach of a disease.

**Proglottid** Single segment of a tapeworm.

**Prognosis** An estimate of the outcome of a disease. Poor prognosis indicates that outcome is liable to be fatal.

**Proguanil** A biguanide antimalarial used alone or in combination for the prevention of malaria.

**Proportional mortality rate (PMR)** A measure of the relative contribution to total mortality by a specific cause and these are expressed as number of deaths assigned to the state cause in a calendar year per 1000 total deaths in that year.

**Protein** Molecular constituent of all cells comprising amino acid building blocks.

**Proto-oncogene** A gene in a cell that regulates cell growth and development in an orderly fashion. If a proto-oncogene mutates, it can give rise to cancer by causing growth without the normal controls. The proto-oncogene is then called an oncogene.

**Protoscolex** The scolex of a larval stage of the hydatid tapeworm. Morphologically it resembles the adult scolex.

**Protozoa** The lowest division of the animal kingdom, including unicellular or acellular organisms with a eukaryotic structure.

**Proximal** The area of the body that is closest to the heart.

**Pruritus** Itching.

**PSP** See paralytic shellfish poisoning.

**Pthiriasis** Infestation with the crab (or pubic) louse, *Phthirus pubis*.

**Pulmonary oedema** Fluid in the small air sacs of the lungs, from inefficient pumping by the heart or leakage of fluid from the blood vessels in the lungs (possibly from envenomation). As it prevents air exchange in the lungs it causes hypoxia and may lead to death.

**Pupa** The third stage in mosquito and other endopterygote insect development, emerging when the last larval instar shed its skin. Pupae swim but do not feed.

**Purified Protein Derivative (PPD)** Reagent used by intradermal administration in the Mantoux (tuberculin) test for TB.

**Pyogenic** Pus forming

**Pyrogenic** Fever causing

**Pyrexia** A fever - a raised body temperature (above 37°C in humans).

# Q

**QALY** Quality adjusted life years.

**Q Fever** Query Fever. A zoonotic febrile illness caused by the rickettsial organism *Coxiella burnetii*. Is a particular hazard to abattoir workers but also causes problems to farmers, veterinarians and other farm workers. A vaccine (QVAX) is no available.

**Qinghaosu** See Artemether.

**Quaddies** Colloquial name used in northern Queensland to describe the Australian jellyfish *Chiropsalmus quadrigatus* (there is currently some doubt about the accuracy of this species name).

**Qualitative Measures** Measures which describe in words or diagrams rather than using numbers.

**Quantitative Measures** Measures using numbers to attempt to measure what has occurred.

## Quarantine

1. Complete quarantine: The limitation of freedom of movement of such well persons or domestic animals as have been exposed to a communicable disease, for a period of time not longer than the longest usual incubation period of the disease, in such manner as to prevent effective contact with those not so exposed.

2. Modified quarantine: A selective, partial limitation of freedom of movement of persons or domestic animals, commonly on the basis of known or presumed differences in susceptibility but sometimes because of danger of disease transmission. It may be designed to meet particular situations. Examples are exclusion of children from school; or exemption of immune persons from provisions required of susceptible person, such as contact acting as food handlers; or restriction of military populations to the post or to quarters.

3. Personal surveillance: The practice of close medical or other supervision of contacts in order to promote prompt recognition of infection or illness but without restricting their movements.

4. Segregation: The separation for special consideration, control or observation of some part of a group of persons or domestic animals from the others to facilitate control of a communicable disease. Removal of susceptible children to homes of immune persons, or establishment of a sanitary boundary to protect dis infected from infected portions of a population, are examples.

**Queensland Spotted Fever** A tick-borne spotted fever endemic to mainland Australia. Caused by *Rickettsia australis*.

# R

**Radical surgery** An operation to remove a cancer, plus adjacent tissue and lymph nodes.

**Radiosensitive** A cancer that responds to radiotherapy.

**Radiotherapy** A treatment which uses atomic particles and high energy rays to destroy cancerous cells.

**Random sampling** The sampling process whereby each unit in the population has an equal chance of being selected.

**Rabies** An almost invariably fatal viral infection of the CNS in mammals. Caused by a rhabdovirus and mostly transmitted by bite. While there is no effective treatment for the infection, it can be prevented by the use of a human diploid vaccine if given before the onset of symptoms.

**Rate** A rate is the frequency with which a health event occurs in a defined population. The components of the rate are the numbers of deaths or cases (the numerator), the population at risk (denominator), and the specified time in which the events occurred. All rates are ratios, calculated by dividing the numerator by the denominator.

**Reaginic antibody** As used by immunologists, this term refers to IgE antibodies. As used by microbiologists, it refers to antibodies produced in syphilis – probably in response to the tissue damage caused by *Treponema pallidum*. Production of these antibodies in patients with syphilis has been utilised in the development of the non-treponemal serological tests for syphilis such as the VDRL Test, the RPR Test and the now superceded Wasseman Complement Fixation Test. These tests are useful in that they are only positive in active syphilis but they have many biological false positive reactions, including pregnancy.

**Recrudescence** Reactivation of infection; in malaria, renewed manifestation of infection due to survival of RBC forms.

**Red back spider** Spider found mostly in Australia and is similar to the Black Widow of America and the Button spider of South Africa. Belongs to the species *Latrodectus hasseltii*.

**Red tide** The appearance of a reddish-brown scum on the surface of the sea caused by dinoflagellates at certain times of the year when heat and other climatic conditions allow for vast expansion in their numbers. Unlike the dinoflagellates that cause PSP, they seem to cause no medical problem apart from irritation of the eyes (conjunctivitis), foul-tasting sea water, and leaving a rotting, unpleasant smell when they dry out on the beach.

**Reduviid bugs** Blood sucking hemipterans found in Latin America and which serve as vectors for *Trypanosoma cruzi*, the cause of Chagas' Disease. These insects are also known as 'cone nose bugs', 'assassin bugs' or 'triatomids'. They belong to the family Reduviidae and the genera *Rhodnius* and *Triatoma*, *Panstrongylus* amongst others.

**Reef spawn** Colloquial term for red tide. Contrary to the popular belief this has nothing to do with the spawning of the reef seen at set times of the year.

**Refractory** Resistant to ordinary treatment or infection.

**Relapse** Recurrence of malarial parasitaemia with fresh infection of RBC's by merozoites derived from hypnozoites in

the liver. The reappearance of a disease after a period when the symptoms lessened or ceased. A renewed manifestation of clinical symptoms and/or parasitaemia associated with malaria infection, separated from the previous manifestation by an interval greater than the one reflecting the normal periodicity of paroxysms.

**Remission** The period when the symptoms or signs of a disease have ceased.

**Renal failure (acute)** Inefficient functioning of the kidney, leading to death unless acute medical attention is available. Envenomation (especially snake bite) is a common cause, as well as a range of medical conditions, including infection.

**Representative Sample** A sample that gives an indication of the composition of the whole population.

**Resection** The surgical removal of tissue.

**Reservoir host** An animal species which carries a pathogen without detriment to itself and serves as a source of infection. Host which acts as a reservoir of the infection in nature.

**Reservoir of infectious agent** Any human beings, animals, arthropods, plants, soil, or inanimate matter in which an infectious agent normally lives and multiplies and on which it depends primarily for survival, reproducing itself in such manner that it can be transmitted to a susceptible host.

**Resistance** An inherited ability of a pathogen or vector to survive treatment with a chemical designed to kill it. The ability of a parasite to live in the presence of a drug, that would normally kill members of the same species.

**Resistance (Host)** The sum total of body mechanisms which interpose barriers to the progress of invasion or multiplication of infectious agents, or to damage by their toxic products.

1. Immunity - That resistance usually associated with possession of antibodies having a specific action on the microorganism concerned with a particular infectious disease or on its toxin. Passive immunity is attained either naturally, by maternal transfer, or artificially, by inoculation of specific protective antibodies (convalescent or immune serum or immune serum (gamma) globulin (human) and is of brief duration (days to months). Active immunity lasting months to years is attained either naturally, by infection, with or without clinical manifestations, or artificially, by inoculation of fractions or products of the infectious agent or of the agent itself, in killed, modified or variant form.

2. Inherent resistance - An ability to resist disease independently of antibodies or of specifically developed tissue response; it commonly rests in anatomic or physiologic characteristics of the host; it may be genetic or acquired, permanent or temporary.

**Respiratory arrest** Cessation of breathing, often caused by envenomation (or poisoning).

**Resting habits** The habits determining the places and times of day or night that mosquitoes rest.

**Rhabditiform** A muscular structure of three parts proximal bulb, narrow isthmus and distal body or corpus as in free-living rhabditoids, parasitic oxyuroids, and free-living and non-infective stages of *Strongyloides* spp.

**Rhizostome** A member in the Order of jellyfish having 8 modified mouth arms armed with nematocysts, rather than the usual tentacles. Each mouth arm has numerous small mouth openings rather than the usual single manubrium.

**Rhopalium (pl. rhopalia)** The specialised structures present in the sensory niches between the four pedalia of cubozoan (box) jellyfish. It houses the ocellus (eye) and statocyst (balance organ). Rhopalia are also present,

although less obvious, in scyphozoan jellyfish.

**Rickettsia(e)** Microbial agent(s) appearing like small bacteria and multiplying by simple fission, but only within a living host cell.

**Ringworm** See tinea.

**Risk** The probability of harmful consequences arising from a hazard.

**Risk Factor** An aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or inherited characteristic that is associated with an increased risk of a person developing a disease.

**RNA** Ribonucleic acid. A type of nucleic acid that carries the message coded in DNA (the genes) to the manufacturing system of the cell.

**Romana's Sign** Oedema of the eyelid in early Chagas' Disease (South American trypanosomiasis) due to the infected faeces of the vector assassin (triatomid) bug causing swelling of the mucosa of the eye.

**Ross River Fever** See Epidemic Polyarthritis, Ross River Virus.

**Ross River virus** A mosquito-borne arbovirus causing epidemic polyarthritis in Australia and certain islands of the Western Pacific to which it has spread.

**Rostellum** The protuberant anterior part of the scolex of certain tapeworms. May be unarmed or armed with rows of hooklets.

## S

**Salivary glands** The glands that produce the saliva injected when a mosquito or other ectoparasite bites, which prevent blood from clotting while the mosquito feeds.

**Salpingitis** Inflammation of the fallopian tubes.

**Sarcoma** A cancer of connective tissue, bone, cartilage, fat, muscle, nerve sheath, blood vessels or lymph system.

**Scabies** A parasitic skin diseases caused by the mite, *Sarcoptes scabiei*, presenting often as intensely itchy papules, vesicles, or tiny linear burrows containing scabies mites and their eggs. Lesions are often found around finger webs, skin folds and flexures, the abdominal region and external genitalia (especially in men). Often associated with a rash on the body, but usually sparing the face.

**Schistosomiasis** A disease caused by parasites of the genus *Schistosoma*, also known as bilharzia, which has an aquatic snail intermediate host.

**Schizonts** Stage in the life cycle of opicomplexan protozoa in which there is multiple asexual divisions (e.g. in malarial parasites).

**Scolex** The anterior organ of a tapeworm used for attachment to host tissues. Also known as the holdfast.

**Scorpionfish** See Scorpaenidae.

**Scorpaenidae** Family name for a group of fish (including the stonefish) having venomous spines which may cause severe local pain. Heat is usually an effective analgesic for this more deeply-seated pain.

**Scrub typhus** A febrile illness caused by *Orientia tsutsugamushi*, transmitted through the larval stage of several species of infected trombiculid mites, often called chiggers. The endemic region is a roughly triangular area bounded by Japan in the north, Pakistan in the west and with Queensland, Vanuatu and the Solomon Islands in the South.

**SCUBA** Self-contained underwater breathing apparatus.

**Scurvey** A diseases resulting from vitamin C deficiency.

**Scyphozoa** The taxonomic Class for most jellyfish except the cubozoans.

**Sea lice** A colloquial term used for any creature, or anything present in sea water causing a mild irritation of the skin, either with or without a rash. There is no single creature responsible for this stinging effect.

**Sea nettle** Colloquial term for the north American jellyfish *Chrysaora quinquecirrha*.

**Sea snakes** Marine, air breathing reptiles with a potent neurotoxic and myotoxic venom responsible for many deaths world-wide - although there are no documented deaths in Australia. They are usually found close to shore, or on coral reefs. They are easily distinguished from land snakes by their wide, flattened tail which is used for swimming, and from eels by their lack of gills. Fortunately, despite having a potent venom, when they bite they inject venom in only some 20% of cases.

**Seasonal prevalence** The number of cases of infection in relation to the unit of population in which they occur (a static measure) at different times of the year.

**Sea urchins** Creatures with needle-sharp spines that are present on rocks or reefs. They cause simple, but painful puncture wounds with spines frequently breaking off in the wounds which leads to infection. Some species also produce toxins that may cause severe localised pain or other systemic symptoms.

**Secondary attack** A measure of the occurrence of a contagious disease among known (or presumed) susceptible persons following exposure to a primary case.

**Secondary cancer** A cancer that originally started somewhere else in the body, but is now growing at another site. A metastasis.

**Semaeostomeae** The taxonomic order of scalloped jellyfish.

**Semelparous** Giving birth only once.

**Seminal receptacle** A dilated organ in the female genital tract of cestodes which stores sperms.

**Seminal vesicle** The dilated lower part of the vas deferens of cestodes which opens into cirrus.

**Sensitivity** The probability that the test will be positive when infection is present.

**Septicaemia** The presence of multiplying bacteria in the blood associated with severe clinical symptoms.

**Serpiginous** A lesion which takes on a winding tunnel-like appearance (eg in cutaneous larva migrans and the larva currens rash).

**Serum sickness** A complex systemic reaction that may become evident any time up to 14 days after antivenom or antitoxin use. Symptoms are fever, generalised lymphadenopathy and an urticarial rash. Severe cases of serum sickness may have to be treated with oral steroids. The incidence of serum sickness is often related to the amount of antivenom used.

**Shock** Collapse of the circulation resulting in inadequate tissue perfusion to the body cells.

**Side effects** Unwanted effects of a drug or treatment.

**Sign** An indication of the existence of something; any objective evidence of a disease.

**Simuliid** A family of biting flies commonly called blackflies including the important *Simulium*, sometimes vectors of onchocerciasis.

**Siphonaptera** (Aphaniptera) Order of jumping and blood-sucking, wingless (apterous) insects known as fleas.

**Siphonophora** The taxonomic group of hydroids that are not single animals, but colonies of animals. They may be either free swimming or floating, with or without a float. The genus of dominating medical importance is *Physalia*.

**Sleeping Sickness** A disease caused by haemoflagellate protozoa and transmitted by blood-feeding tsetse flies of the genus *Glossina*. East African (Rhodesian) Sleeping Sickness is the more severe zoonotic form caused by *Trypanosoma brucei rhodesiense* found on the game-rich savannahs of East Central Africa while West African



(Gambian) Sleeping Sickness is the more chronic form found in riverine areas of West Central Africa and which has a significant human reservoir although animals such as pigs may also be involved as reservoirs.

**Slow virus** See prion.

**Smallpox** Variola. A human viral disease characterised by vesicular skin lesions covering the whole body but being particularly heavy at the extremities including the face. Caused by a pox virus. The disease can be prevented through regular smallpox vaccinations. Variola has now been officially declared eradicated by the WHO.

**Snottie** A colloquial term for *Cyanea*. Also known as the Lion's mane and Hair jellyfish.

**Somatic** Of the body.

**Source of infection** The person, animal, object or substance from which an infectious agent passes immediately to a host. Source of infection should be clearly distinguished from source of contamination, such as overflow of septic tank contaminating a water supply, or an infected cook contaminating a salad.

**Species** A fairly well-defined, interbreeding group of plants or animals. The lowest taxonomic grouping of closely-related varieties - below a Genus. See Taxonomy .

**Specificity** The probability that the test will be negative when the infection is not present.

**Spicule** A male accessory reproductive organ in nematodes helping to attach the male to the female during copulation. There may be one or two or it may be absent in some nematodes.

**Spiruroid** A two-parted oesophagus - anterior muscular and posterior glandular structure as in most of Spiruroidea and Filarioidea.

**Sporozoite rate** The proportion of female mosquitoes that have sporozoites in the salivary gland.

**Sporozoites** The final stage of development of *Plasmodium* in the mosquito; this is the infective form of the malarial parasite; occurring either in a mature oocyst before its rupture or in the salivary gland of a mosquito.

**SPR** Slide Positivity Rate is obtained by dividing positive blood slides by total slides examined.

**Spread** The way a neoplasm increases in size or invades the body.

**Squamous Cell Carcinoma** Malignant tumour of squamous epithelium of skin, which generally spreads and metastasises.

**Stage** Estimate of the extent of spread of a cancer; usually expressed in as a number, often with subdivisions. The prognosis of a particular cancer varies with the staging.

**Statocyst** A jellyfish balance organ, usually consisting of a calcium or magnesium carbonate crystal, the movement of which against surrounding cilia enables the medusa to determine its position in the water.

**Stichosome** A long, slender oesophagus embedded in rows of emboidal oesophageal gland cells as in Trichinelloidea.

**Sting** The painful injection of a venom through skin or mucous membranes of a victim. Cf. bite and envenomation.

**Stingers** A colloquial term to be avoided. In tropical Australia the term usually refers to the lethal box-jellyfish *Chironex fleckeri*, whereas in the rest of Australia it may refer to any stinging jellyfish which are non-lethal.

**Stingose** 20% aluminium sulphate solution - useful for itching caused by some insect stings, but less effective (or ineffective) for the skin pain of jellyfish envenomations.

**Stingray** A group of fish with flattened fins making it look saucer-shaped. It has a long tail with at least 1 and up to 7 venomous spines. When stimulated the tail may flick across, either embedding the barb in the victim, or causing a severe laceration. Eight deaths (2 in Australia) have occurred world-wide, either from blood loss, venom effects or tetanus.

**Stomolophus** Usually an innocuous genus of jellyfish represented by *Stomolophus meleagris* world-wide. However, in areas of East China around Behoe, on the East China Sea, there have now been 8 reported deaths from a rare species called *S. numerai*.

**Stonefish** *Synanceja* sp. - a fish which can camouflage itself, changing its colour to match the background. It remains motionless on the bottom where the unwary victim can tread on it. There are 13 venomous dorsal spines on its back which can penetrate even thin-soled shoes, injecting a venom that causes severe localised pain. The pain is best relieved by the application of heat. No deaths have occurred in Australia; 2 poorly-documented deaths have occurred in other countries.

**Strobila** The body of a tapeworm.

**Strobilisation** The process of producing or growing new segments (proglottids). This happens near the neck region. A form of asexual reproduction in some cubozoan jellyfish by which miniature medusalike structures are formed, often one on top of the other, resembling stacked dinner plates.

**Strongyliform** A short buccal muscular structure with waist found in nematodes, such as Ancylostomatidae.

**Strongyloides** A genus of intestinal nematodes which includes *Strongyloides stercoralis* in humans and *S. fillicorni* in monkeys and humans.

**Subclinical infection** Without clinical manifestations: said of the early stages of, or slight degree of, an infection.

**Subumbrella** The area of a jellyfish under the bell.

**Surveillance** The monitoring of changes in the numbers of mosquitoes or disease cases over a period of time.

**Surveillance of disease** As distinct from surveillance of persons, surveillance of disease is the continuing scrutiny of all aspects of occurrences and spread of a disease that are pertinent to effective control. Included are the systematic collection and evaluation of:

1. morbidity and mortality reports;
2. special reports of field investigations, of epidemics and of individual cases;
3. isolation and identification of infectious agents by laboratories;
4. data concerning the availability and use of vaccines and toxoids, immunoglobulin, insecticides, and other substances used in control;
5. information regarding immunity levels in segments of the population; and
6. other relevant epidemiological data.

**Susceptible** Prone to infection by parasites and pathogens. A person or animal presumably not possessing sufficient resistance against a particular pathogenic agent and for that reason liable to contract a disease if or when exposed to the disease agent.

**Swollen Belly Syndrome** A condition seen in very young children in Papua New Guinea infected with a *Strongyloides fülleborni*-like species of intestinal nematode.

**Symptom** Any functional evidence or disease or of a patient's condition; a change in a patient's condition indicative of some bodily or mental state.

**Symbiotic** A close relationship between two species which usually works to the advantage of both.

***Synanceja* sp.** See stonefish.

**Syndrome** A pattern of symptoms and signs, appearing one by one or simultaneously, that together characterise a particular disease or disorder.

**Syphilis** A sexually transmitted disease caused by *Treponema pallidum*. A non-venereal form, known as treponarid (or by such local names a bejel or Njovera) is caused by *T. endemicum* and is clinically very similar to yaws.

**Systemic** Involving the whole body or organism, and not just individual parts.

# T

**Tabanid** A family of biting flies commonly called horseflies or deerflies (genus *Tabanus*), sometimes vectors of loiasis.

**Tachypnoea** Excessively above normal and rapid breathing rate.

**Tachycardia** Excessively above normal rate of heart beat.

**Taenia** A genus of cestodes (tapeworms), which include *Taenia saginata* (beef tapeworm), *T. solium* (pork tapeworm) and *T. asiatica* (Asian pork tapeworm). All have human final (definitive) hosts.

**Tamoya** A Genus consisting of large carybdeid jellyfish present around the world, possibly covered by the colloquial term, Morbakka.

**Tampan** A soft tick (Argassid). The genus *Ornithodoros* are vectors of endemic relapsing fever due to *Borrelia recurrentis* (= *B. duttoni*).

**Tamponade** An increase of fluid around the heart.

**Taxonomic study** Identification of species and their genetic relationship to one another.

**Taxonomy** Systematic binomial classification of all living things.

e.g. Kingdom  
Phylum  
Class  
Order  
Family  
Genus  
Species

**T-cell** A specialised white cell (lymphocyte) responsible for cell-mediated immunity. See also T-lymphocyte.

**Tefanoquine** A primaquine analogue discovered by the US Army with activity against liver parasites of malaria and able to suppress blood parasites and kill gametocytes. See also Etaquine.

**Telamon** A cuticular thickening of the ventral wall of the spicular pouch in nematodes. Both gubernaculum and telamon are for guiding the spicules out of the body. Shape and size and number of the spicules, gubernaculum and telamon are also used for identification of the nematodes.

**Tenesmus** Painful but ineffectual attempts at defaecation.

**Tentacle** Long, usually-thick, hair-like structures that contain the nematocysts needed for the capture of food. They may also be used to deliver such food to the mouth of the jellyfish. They may contract up to a tenth of their extended state.

**Teratoma** A neoplasm possibly starting in the foetus and having different types of tissues; e.g., ovarian teratoma

often have teeth, adenoma, and connective tissue proliferation.

**Tetanus/Tetany** Violent spasms, muscle contraction ("lock-jaw") caused by a spore-forming, Gram positive bacillus penetrating the body through a puncture wound, and usually leading to death. The organism occurs in water and may occur after envenomation (eg in stingray spine puncture wounds), as well as the more commonly-known soil contamination (eg in war wounds). It may be prevented by vaccination with tetanus toxoid.

**Tetrodotoxin** The toxin responsible for envenomation in blue-ringed octopus and Japanese Fugu (tetrodotoxic) poisoning from puffer fish ingestion.

**T-helper cells** A type of lymphocyte which assists the B-Lymphocytes in producing antibodies.

**Therapeutic** Refers to a treatment for the cure or control of a disease.

**Tick bite fever** Tick-borne spotted fever.

**Tick typhus** Tick-borne spotted fever.

**Tinea** Also called ringworm. Refers to a variety of superficial fungal infections of the skin on different areas of the body caused by dermatophyte fungi belonging to the genera *Epidemophyllum*, *Microsporum*, and *Trichophyton*.

**Tissue** A collection of cells similar in structure or function.

**T-lymphocytes (or T-cells)** White blood cells that have matured in the thymus gland. There are at least two kinds of T-lymphocytes - helpers and suppressors. In AIDS, the number of helper cells is decreased.

**Tourniquet** A very tight ligature applied over the proximal portion of an extremity (limb) to occlude the artery to prevent blood reaching the distal part of the limb. Useful for severe, uncontrolled arterial bleeding, but dangerous when used for envenomation.

**Tourniquet test** A positive tourniquet test with scattered fine petechiae is one of the earliest clinical signs in dengue haemorrhagic fever.

**Toxicity** The ability to cause ill effects. Poisoning.

**Toxin** Any poisonous substance of microbic, vegetable or animal origin. A substance that is harmful to the tissues.

**Toxoplasmosis** A zoonotic disease caused by the apicomplexan protozoan *Toxoplasma gondii*. The definitive hosts of this parasite species are felids (cats).

**Trachoma** An eye infection causing a purulent conjunctivitis and which can lead to blindness unless treated. Caused by *Chlamydia trachomatis* serotypes A, B and C.

**Transmission** Any mechanism by which a susceptible human host is exposed to an infectious or parasitic agent. These mechanisms are:-

1. Direct transmission

Direct and essentially immediate transfer of infectious agents (other than from an arthropod in which the organism has undergone essential multiplication or development) to a receptive portal of entry by which infection of humans

may take place. This may be by touching, as in kissing, sexual intercourse or biting (direct contact); or by the direct projection of droplet spray onto the conjunctivae, or onto the mucous membranes of the nose or mouth during sneezing, coughing, spitting or talking (usually not possible over a distance greater than 3 ft) (droplet spread); or, as in the systemic mycoses, by direct exposure of susceptible tissue to soil, compost or decaying vegetable matter that contains the agent and where it normally leads a saprophytic existence.

## 2. Indirect transmission

### (a) Vehicle-borne

Contaminated materials or inanimate objects such as toys, handkerchiefs, soiled clothes, bedding (fomites), surgical instruments or dressing (indirect contact); water, food, milk, biological products including serum and plasma, or any substance serving as an intermediate means by which an infectious agent is transported and introduced into a susceptible host through a suitable portal of entry. The agent may or may not have multiplied or developed in or on the vehicle before being introduced into man.

### (2) Vector-borne

(i) Mechanical:- Includes simple mechanical carriage by a crawling or flying insect through soiling of its feet or proboscis, or by passage of organisms through its gastrointestinal tract. This does not require multiplication or development of the organism.

(ii) Biological:- Propagation (multiplication), cyclic development, or a combination of them (cyclo-propagation) is required before the arthropod can transmit the infective form of the agent to man. An incubation period (extrinsic) is required following infection before the arthropod becomes infective. Transmission may be by saliva during biting, or by regurgitation or deposition on the skin of agents capable of penetrating subsequently through the bite wound or through an area of trauma following scratching or biting. This is transmitted by an infected invertebrate host and must be differentiated for epidemiological purposes from simple mechanical carriage by a vector in the role of a vehicle. An arthropod in either role is termed a vector.

### (c) Air-borne

The dissemination of microbial aerosols with carriage to suitable portal of entry, usually the respiratory tract. Microbial aerosols are suspensions in air of particles consisting partially or wholly of microorganisms. Particles in the 1 to 5 micron range are quite easily drawn into the lungs and retained there. They may remain suspended in the air for long periods of time, some retaining and others losing infectivity or virulence. Not considering as airborne are droplets and other large particles, which promptly settle out; the following are airborne, their mode of transmission indirect:

(i) Droplet nuclei: Usually the small residues which result from evaporation of droplets emitted by an infected host. Droplet nuclei also may be created purposely by a variety of atomising devices, or accidentally, in microbiology laboratories or in abattoirs, rendering plants, autopsy rooms, etc. They usually remain suspended in the air for long periods of time.

(ii) Dust: The small particles of widely varying size which may arise from contaminated floors, clothes, beddings, other articles; or from soil (usually fungus spores separated from dry soil by wind or mechanical

stirring).

Note: Air conditioning and similar air circulating systems may play a significant role in air-borne transmission (e.g. Legionnaire's disease).

**Transport host** An animal merely acting as a transporter for a parasite, c.f. Paratemic host.

**Trap nets** Nets used to sample the living mosquito population. By permitting access to a bait but restricting movement away from it, trap nets tend to concentrate female mosquitoes near the bait.

**Trauma** An injury to the body from a mechanical force.

**Travel medicine** That aspect of public health which seeks to prevent illnesses and injuries occurring to travellers, especially those going abroad, and manages problems arising in travellers coming back or from abroad. It is also concerned about the impact of tourism on health and the provision of health and safety services for tourists.

**Travellers' Diarrhoea** Diarrhoea frequently recorded from travellers, especially those visiting tropical or developing regions of the world. Probably the commonest travel-related infection. Although it can be caused by a range of viral, bacterial, protozoan and even on occasions, fungal and helminthic agents, in excess of 80-90% of cases are due to enterotoxigenic *Escherichia coli* (ETEC) or less commonly enteroadherent *Esch. coli* (E.Ad.EC).

**Trichinella** A genus of nematode worms which cause the zoonotic infection trichinellosis (trichinosis). Includes five species, all of which can infect humans, *Trichinella spiralis*, *T. nativa*, *T. nelsoni*, *T. britovi* and *T.pseudospiralis*

**Trichostrongylus** A genus of animal parasitic intestinal nematodes. Can infect humans. The egg, passed in the faeces, is similar to, and is often confused with, hookworm.

**Trophozoites** The motile, feeding stage of protozoan parasites.

**Tropical eosinophilia** A syndrome found in certain tropical areas in which patients present with hypereosinophilia, pulmonary infiltration, cough, chest pain and asthma-like attacks. Associated with infection by the filarial nematodes *Wuchereria bancrofti* and *Brugia malayi*. These infections are usually microfilaraemic, especially in expatriates, i.e. no microfilariae can be detected in peripheral blood.

**Tropical Medicine** In simple terms, tropical medicine is the medicine practised in the tropics. It arose as a discipline in the 19th century when physicians responsible for the health of colonists and soldiers from the dominant, European countries were faced with diseases not encountered in temperate climates. With extensive worldwide travel possible today, tropical diseases are now being widely seen in returning travellers and expatriates.

**Tropical sprue** A chronic malabsorptive, diarrhoeal, steatorrhoeic condition of unknown aetiology but often associated with secondary bacterial involvement.

**Tropical ulcer** A cutaneous ulcer seen particularly in malnourished individuals. The cause of these ulcers is often ascribed to a synergistic infection by the spirochaete *Treponema vincentii* and the anaerobic Gram negative rod, *Fusobacterium nucleatum*.

**Tropism** An affinity for a particular organ or body system (e.g. neurotropic).

**Trypanosomiasis** A disease caused by parasites of the genus *Trypanosoma* and including sleeping sickness in Africa and Chagas disease in Central and South America.

**Tsetse** A biting fly found in Africa, genus *Glossina*, which may transmit sleeping sickness.

**T-suppressor cells** A type of T-lymphocyte that stops antibody production when the invading antigen has been inactivated.

**Tularaemia** A zoonotic infection of rabbits and other small mammals, caused by the Gram negative rod, *Francisella tularensis*.

**Tumour** A mass or swelling. The lump can be a neoplasm (benign or malignant) or a tumour can be a mass due to an infection or inflammation.

**Typhoid (Enteric) fever.** A septicaemic infection of humans caused by *Salmonella typhi*. A similar but generally milder enteric fever, paratyphoid, is caused by *Salmonella paratyphi* A,B,C.

**Typhus** A louse-borne febrile illness of humans caused by *Rickettsia prowazekii*. A similar but milder zoonotic illness is murine typhus, caused by *R. typhi* harboured by rodents and transmitted by the tropical rat flea, *Xenopsylla*. The so-called tick typhus group of diseases are better called spotted fevers.



# U

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**Ulcer** A visible break in the body's surfaces; e.g. skin, gut, urinary tract, which is not caused by acute trauma.

**ULV** (Ultra-low-volume) Application of concentrated insecticidal solutions sprayed sparsely over a large area in a vehicle or aeroplane at dosage rates of 740 ml to 1 litre per hectare for mosquito control. This technique produces very large droplets forming a fog or aerosol of concentrated insecticide.

**Undifferentiated** A type of cancer in which the cells have become very primitive and do not look or behave like the cells from which they originated. Usually more malignant than a cancer which is highly differentiated. Anaplastic.

**Urticaria** Local itching of the skin – often results from an allergic reaction.

## V

**Vaccination** Injection of a vaccine to prevent certain diseases. (Syn. immunisation).

**Vaccine** A preparation of dead particulate or weakened bacteria or viruses prepared for injection into the body so that antibodies are formed to prevent disease (eg polio). Detoxified but genetically potent toxins (called toxoids) can also be used (e.g. tetanus and diphtheria)

**Vas deferens** A canal connecting vas efferens to cirrus.

**Vas efferens** A canal extending from a testis to the deferens.

**VDRL Test** Venereal Diseases Research Laboratory Test. One of the non-treponemal reaginic tests for syphilis.

**Vector** An organism which carries or transmits a pathogen from a plant or animal to another plant or animal of the same species which is free of the disease. Anopheline mosquitoes are the vectors of human malaria.

**Vector density** The number of a given vector species present. It may be expressed in relative terms (e.g., the biting density in relation to the human host) or in absolute numbers (e.g., the number present in a room, cattle-shed or artificial shelter).

**Velarium** A folded-in extension of the edge of the bell in the cubozoa which helps create a jet of water to propel the jellyfish forwards. It may contract differentially to enable a change of direction.

**Venom** A toxin which usually enters the body by injection through intact skin (e.g. a jellyfish sting or a snake bite by a venomous species).

**Ventricular fibrillation** A very fast 'flickering' of the heart with no measurable circulation of blood by the heart. This usually occurs after a heart attack (or electrocution).

**Vesicle** A fluid-containing blister on the skin, often quite itchy.

**Vinegar** Acetic acid (4-6%) - this totally de-activates the nematocysts of all cubozoans (box-jellyfish) tested to date. Despite popular misconception it has no effect on the venom injected and does not help pain.

**Viraemia** Presence of a virus in the blood.

**Virion** Complete infective virus particle.

**Virulence** The relative infectiousness of a microorganism, or its ability to overcome the defences of the host.

**Virus** An extremely small infective agent requiring living cells for replication. Are either RNA or DNA, never both.

**Visceral larva migrans** The end results of heavy infection and migration of larva of *Toxocara* spp (especially *T. canis* - the dog Ascarid) in the viscera, producing a granulomatous reaction and pathology at the site.

**Visceral leishmaniasis (Kala azar)** A protozoan disease caused by *Leishmania donovani*, found around parts of

the Mediterranean basin, tropical Africa, South America, and central and eastern Asia. The disease is transmitted by female sandflies of the genus, *Phlebotomus* in the Old World and *Lutzomyia* in the New World. Full-blown disease is often fatal, if untreated. Growth nodules of the disease or leishmanioma form initially and, if spontaneous recovery does not occur, proliferating parasites burst out of the nodules, disseminating throughout the body.

**Vitelline glands** The glands which provide substances for the development of the egg and the formation of the shell in trematodes and cestodes.

**Vulva** An opening of the female reproductive system, may be situated at the anterior, middle or posterior parts and on the ventral side of the body according to groups of nematodes.

# W

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**Weil's Disease** Epidemic jaundice. A severe form of leptospirosis caused by such serovars as *Leptospira icterohaemorrhagiae*.

**Weil-Felix Test** An agglutination test used in the laboratory to diagnose rickettsial diseases. It depends on a non-specific cross reaction between antibodies produced by the rickettsial infection with the OX-2, OX-19 and OXK antigens of the Gram negative rod, *Proteus*.

**Widal Test** A serological test used to detect antibodies in the diagnosis of typhoid. Antigens detected are the O (somatic), H (flagellar) and Vi (virulence) antigens.

**Winterbottom's Sign** A posterior cervical lymphadenopathy indicative of early West African (Gambian) Sleeping Sickness due to *Trypanosoma brucei gambiense*.

**Wright's stain** One of the Romanowski stains used to stain blood films and blood parasites such as those causing relapsing fever, malaria trypanosomiasis and filariasis.

# X

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***Xenopsylla*** A genus of fleas infesting rats. The tropical rat flea, *Xenopsylla cheopis* and other species of the genus are major vectors of Bubonic Plague and murine typhus.

**Xenodiagnosis** A method used in the diagnosis of Chagas' Disease (South American Trypanosomiasis), in which vector reduviid bugs are allowed to suck the blood from patients suspected of having the infection. The insects are subsequently examined for the presence of trypanosomes in their gut to confirm infection.

**Xerophthalmia** This is a blinding eye disease, almost exclusively of infants and young children, which results from vitamin A deficiency, associated with protein-calorie-malnutrition. Xerophthalmia literally means 'dryness' of the conjunctiva.

# Y

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**Yaws** A non-venereal disease caused by *Treponema pertenue* and characterised by skin and bone lesions similar to those seen in secondary syphilis. The disease is caused by a spirochaete morphologically, immunologically and serologically identical to *Treponema pallidum*, the cause of syphilis. Yaws is clinically very similar to another non-venereal treponematose, pinta, caused by *T. carateum* and found in South America and the Caribbean.

**Yeast** A single-celled fungus that produces buds (blastospores). Medically important species include *Cryptococcus neoformans*, the cause of cryptococcal meningitis.

**Yeast-like fungus** A yeast that produces pseudohyphae (germ tubes). Includes *Candida albicans* and similar species that infect humans such as *C. tropicalis* and *C. krusei*. Fungi belonging to this genus cause candidiasis (thrush) in humans.

**Yellow Fever** An arboviral (flavivirus) disease, also a zoonosis, being essentially a disease of forest monkeys, which under certain conditions can be transmitted to humans. A vaccine is available.

# Z

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**Zebra fish** See Scorpaenidae.

**Zoid** A specialised structure serving as an organ of a siphonophore such as *Physalia*. Different individuals in the colony often take on specialised functions such as feeding, defence and reproduction - up to a thousand zooids may be found in a single colony.

**Zoonosis** An infection or an infectious disease transmissible under natural conditions from vertebrate animal and humans.

**Zygote** The product of the union of a male and a female gamete.

**Zymodeme** Subtypes of a microbial species that are separated on the basis of their isoenzyme patterns (eg zymodemes of *Entamoeba histolytica*).

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