Flies are insects that belong to the order Diptera. A distinctive feature of Diptera is the presence of only one pair of flying wings on the thorax, the hind wings of which are non-functional and folded along the sides of the abdomen. The house fly is an example of a true fly, and other species that are commonly found in Hong Kong include the blow fly, flesh fly, fruit fly, and tsetse fly.

**House flies**

House flies belong to the family Muscidae. They are medium-sized flies with a greyish brown appearance, carrying four longitudinal black stripes on the thorax. These common flies usually breed in general house refuse. They are particularly attracted to sugary food, and could also feed on livestock or human waste. To control house flies, frequent cleansing should be conducted to ensure that all food waste is promptly eliminated. If necessary, devices such as electric fans or air curtains (preferably with a velocity 8 m/s or higher), anti-fly curtains made of plastic figures, or strips or strips with beads and self-closing doors could be used to reduce the chance of flies entering the premises.

**Blow flies**

Blow flies belong to the family Calliphoridae. They are medium to large-sized flies that carry a metallic grey or blue appearance. Most species breed in rotten vegetables and fruits as well as animal waste. They also breed in meats and carrion.

Many species of blow flies are known for their facultative or obligate parasitism, capable of breeding in wounds or even natural body openings of humans and farm animals. Most of the myiasis cases in Hong Kong are the infestation results of the Chrysomya bezziana, also known as the oriental latrine fly, or the Chrysomya megacephala, also known as the house fly. Myiasis could also be conducted properly. Frequent cleansing and disposal of human and animal excrements should avoid exposure to the air, and should be transferred to the breeding places of the fly species identified in the vicinities of the area concerned. Properly installed glue boards, light traps or insect electrocution devices might also provide useful information at and around premises. Under severe conditions or in case of the removal of such breeding places would be impracticable or impractical, application of appropriate pesticide by trained personnel could also be considered as a supplementary measure for rapid control in the short term.

** Flesh flies**

Flesh flies belong to the family Sarcophagidae. These species are commonly found in Hong Kong. They are medium-sized flies with a greyish brown appearance, carrying four longitudinal black stripes on the thorax and usually the “checkeredboard” pattern on the abdomen. They also have the characteristic that they lay larvae instead of eggs. Urban species mainly breed in decaying meat, decaying vegetables, or other decaying organic materials such as faeces and rotten plants. Depending on the species, larvae may also be carnivorous or parasitic.

**Mechanical carriers**

Mechanical transmission occurs when arthropod pests pick up pathogens on their feet, body hairs, body surfaces or other body structures and finally transmit the pathogens to susceptible hosts. After feeding on an infected animal, arthropods, especially flies and cockroaches, acquire pathogens onto their bodies. Those arthropods may then deposit the disease-causing agents onto our food, cooking utensils, dining wares and body structures, like spines on cockroach’s legs, and certain behaviours, like regurgitating digestive enzymes onto food by flies, facilitate the pick-up and deposition of pathogens. It has been reported that cockroaches are able to carry bacteria including Escherichia coli. Salmonella species and Vibrio species that cause food poisoning in humans.

**Biological vectors**

A vector is any animal that transmits a disease causing agent or an injury through biting, but also transmits the disease to humans in a non-biting way. Those arthropod pests called “disease carriers”, which transport pathogens to susceptible individuals, their food, or surroundings. They can both affect the health of people and impose heavy economic burden on society. Especially in the developing countries. According to the figures from the World Health Organization, a child dies every minute, with the number of those who die each year also being shockingly large. Over 70% of the deaths occur in children younger than five years of age. The reasons are mainly two ways in which arthropods transmit pathogens, either mechanically or biologically.

Mechanical carriers such as biting flies are able to spread the pathogens to other hosts, for example, through biting and hence become infected. The relationship between the pathogens and arthropod vectors are usually highly specific. For example, brown crescent fruit fly can only be transmitted by some mosquito species of the genus Aedes (e.g. Aedes albopictus) while the pathogen causing Malars is only transmitted by certain mosquito species of the genus Anopheles.

In both the mechanical and biological mechanisms of disease transmission, the role of the arthropods is critical in the propagation of infections. In order to control the vector-borne diseases, it is vital to suppress or eliminate the arthropod vectors, if possible, which could be achieved by eliminating or vectors’ breeding sites and improvement on environmental hygiene. Avoiding bites by the arthropod pests can also be an effective means of prevention of vector-borne diseases. Personal protection measures, such as applying insect repellents and wearing long-sleeve clothing in outdoor areas, can reduce the chances of arthropod bites.

Common flies found in Hong Kong

- **House flies**
- **Blow flies**
- **Flesh flies**

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Mechanical carriers and Biological vectors:

- **Two common roles of arthropods in diseases transmission**

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Two common roles of arthropods in diseases transmission

- **Mechanical transmission**
- **Biological transmission**