

An Overview on Control of Vector-borne Diseases

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Introduction

Vectors are small organisms like mosquitoes, mites, and ticks that can spread disease from one infected person (or animal) to another and from one location to another. Vector-borne diseases are diseases caused by these vectors. There are several important vector-borne diseases in Hong Kong, including dengue fever, Japanese encephalitis, malaria, scrub typhus, and spotted fever. The majority of dengue fever and malaria cases are imported from endemic countries via international travel, whereas the majority of cases of scrub typhus and spotted fever were acquired locally and had a history of visiting vegetated areas in Hong Kong, such as hiking areas, outdoor workplaces, vegetated areas near home, or outdoor recreational areas [1].

Dengue fever (*Aedes* mosquitoes), Japanese encephalitis (*Culex* mosquitoes), and malaria (*Anopheles* mosquitoes) are transmitted by mosquitoes, whereas scrub typhus and spotted fever are transmitted by mites and ticks, respectively.

Description

Prevention

To help prevent vector-borne diseases, members of the public must protect themselves from mosquito stings/bites, mites, and ticks, as well as help prevent their proliferation [2].

Protect yourself from stings and bites:

- Wear light-coloured, loose-fitting long-sleeved tops and trousers
- Apply insect repellent containing DEET to exposed skin and clothing
- When hiking or visiting scrubby areas, take extra precautions.

Here are some additional precautions that members of the public should take when hiking or visiting scrubby areas:

Get ready for the visit:

- Avoid wearing sandals or open shoes; instead, wear shoes that cover the entire foot
- To keep arthropods from getting into your skin, tuck your pants into your socks or boots
- Use of scented cosmetics or skin care products is discouraged.

Throughout the visit:

- Keep to the paths and avoid walking through the vegetation. Brushing along the vegetation along the sides of footpaths is not permitted

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- Avoid resting on vegetation or in humid, dark areas
- Clothing should not be hung on vegetation
- Feeding wild or stray animals is not permitted
- Insect repellents should be reapplied as directed.

After the visit:

- Inspect body parts and clothing after the visit. Carefully remove any attached arthropods
- Take a soapy shower and launder your clothes
- Examine and clean the bodies of any accompanying pets
- If a tick is attached to your body, gently remove it by grasping its head with tweezers or fine-tipped forceps close to the skin, then disinfect the bite area and wash your hands with soap and water
- During tick removal, avoid crushing or twisting the tick.

Special considerations when travelling abroad: Travellers to Southeast Asian, African, and South American countries should take extra precautions to avoid stings and bites [3].

Before the trip: Make an appointment with your doctor for a travel health consultation at least six weeks before your trip to assess your risk. The need for any vaccinations, vector control measures, and anti-malarial drugs will be determined during the consultation.

Vaccines for Japanese encephalitis are recommended for travellers who plan to spend one month or more in Japanese encephalitis-endemic countries, particularly in rural areas, as well as for short-term (less than one month) travellers who plan to spend significant time outdoors or at night in rural areas during the disease's transmission season [4].

In Hong Kong, there is no registered malaria vaccine. Travellers who intend to stay in malaria-endemic areas should consult their doctors ahead of time to determine whether anti-malarial prophylaxis is necessary. This medication should be taken before and during the journey, and then continued for a period of time after leaving the area.

During the trip: Carry a portable bed net and apply Permethrin (an insecticide) to it if travelling in endemic rural areas. Permethrin should not be used on the skin. If you are feeling ill, seek medical attention as soon as possible [5].

Upon returning to Hong Kong: Travellers who return from affected areas and feel ill, such as having a fever, should seek medical attention as soon as possible and provide their doctors with travel details.

Help prevent vector proliferation:

- Prevent the build-up of stagnant water:
- Change the water in vases once a week and avoid placing saucers beneath flower pots
- Water containers should be tightly sealed
- Check that the air conditioner drip trays are free of stagnant water
- Place all used cans and bottles in covered trash cans.
- Control vectors and disease reservoirs:
- Inspect and de-infest pets and pet beddings on a regular basis

- To avoid rat infestations, properly store food and dispose of garbage.

Conclusion

DEET-containing insect repellents are safe to use on pregnant women and children aged 6 months and older. Children aged 2 months and up can use DEET-containing insect repellents with a DEET concentration of up to 30% when travelling to countries or areas where mosquito-borne diseases are endemic or epidemic and exposure is likely.

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