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DENGUE FEVER – PREVENTION AND CONTROL

INTRODUCTION

Recently, many of the 22 Pacific Island countries of the South Pacific Commission have been affected by epidemics of dengue fever. Latest reports indicate that there were nearly 20,000 confirmed and suspected cases of dengue fever in the region in 1989.

In the view of the South Pacific Commission the potential for other epidemics of dengue fever is high. This Information Circular is intended to remind community health workers how to achieve dengue prevention and control.

Dengue fever is spread by the *Aedes* mosquitoes, which predominantly breed in man-made breeding sites, close to homes. The most effective way to prevent dengue is by action at the community level, by eliminating breeding sites around homes. Communities should be mobilised and motivated using sectoral groups that have established networks within Pacific Islands society.

EPIDEMIOLOGY OF DENGUE FEVER

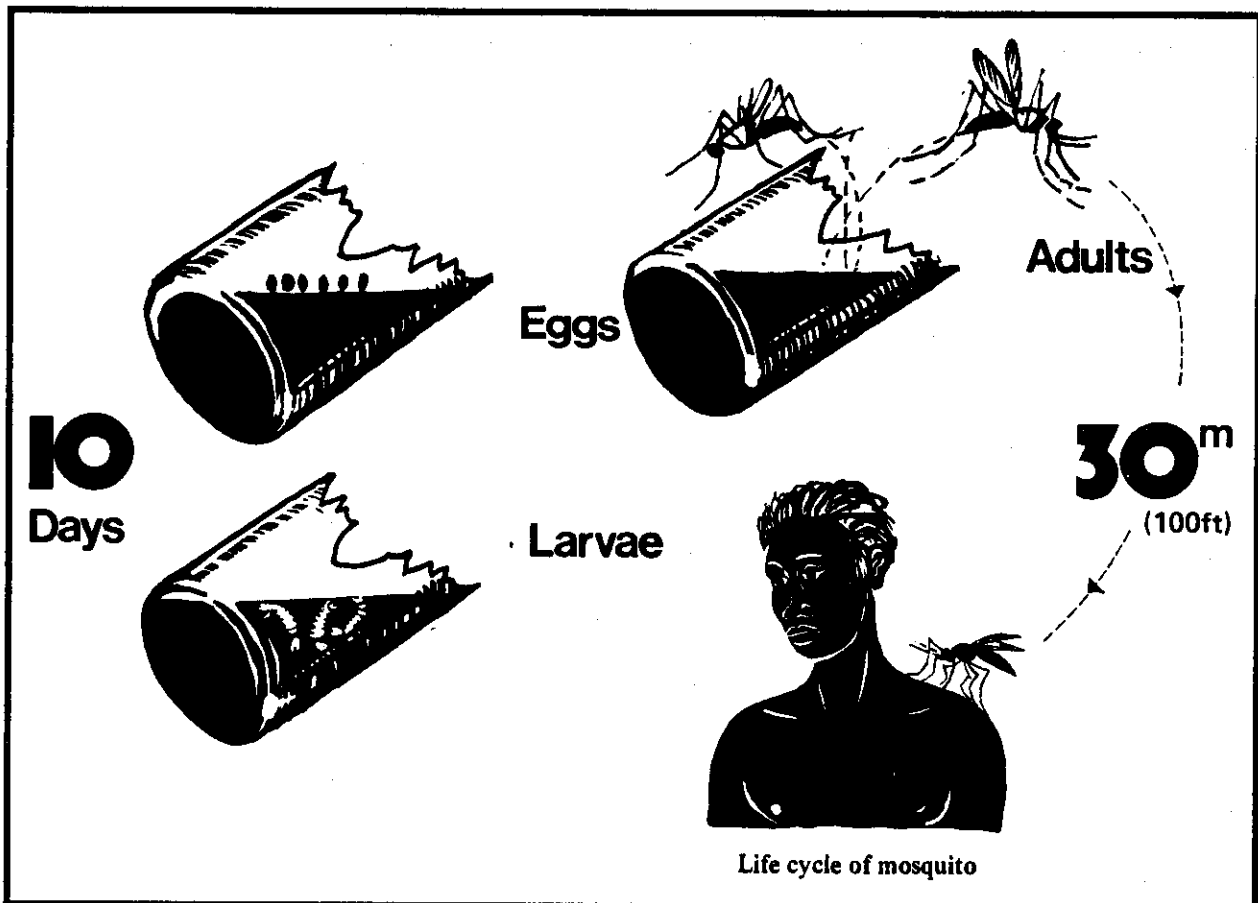
Dengue fever is caused by a virus that is spread by a species of *Aedes* mosquito. Symptoms of dengue fever may include a sudden onset of fever, intense headache, deep eye pain, joint and muscle pains, loss of appetite, weakness, lower back pain and a rash. The duration of dengue fever is usually 1-2 weeks. Recovery may be slow, with symptoms of fatigue and depression. Sometimes the dengue fever virus can cause severe complications such as dengue haemorrhagic fever and dengue shock syndrome. People with these complications should be hospitalised for proper supportive care. All suspected dengue cases should be reported to the local health authorities.

Dengue fever is spread when an *Aedes* mosquito bites someone who is infected with dengue fever. About 8-11 days after biting the infected person, these mosquitoes are able to spread dengue whenever they bite someone who is not yet infected. People usually get ill about 5-6 days after being bitten by an infected mosquito. Dengue often spreads when a person who is infected elsewhere, but who is not yet ill, returns home. Then other members of the family may also become infected. Dengue can then spread through the local community and from village to village. A explosive dengue epidemic then occurs that affects the whole country.

VECTOR OF DENGUE FEVER



The primary mosquito species that spreads dengue in the Pacific is *Aedes aegypti*. This mosquito breeds rapidly on many Pacific islands because of the high rainfall and warm temperatures. *Aedes aegypti* has very successfully adapted to reproducing in man-made breeding sites such as water tanks, septic tanks, and discarded rubbish, e.g. tyres, cans, bottles, plastic containers, coconut shells etc. It has a short flying range, typically around 30 metres. Therefore, possible breeding sites near the home are the concern rather than those in the bush. *Aedes aegypti* can and does thrive in villages, towns, and cities, when suitable breeding sites are allowed to exist. As shown in the diagram, the life cycle of the mosquito takes about 10 days (that is from egg to an adult mosquito capable of biting and transmitting the disease).



COMMUNITY INVOLVEMENT

Given the characteristics of the *Aedes aegypti* the best way to reduce the local mosquito population is by environmental measures to get rid of breeding sites. Anti-mosquito measures should be taken within the general area of each home. Only by action at the community level can problems like dengue be effectively addressed. People need to be actively involved in the factors that affect their own health, and utilise means that are within their capabilities. This is a Primary Health Care (PHC) approach. Individuals and communities need to realise and accept responsibility for their own local environmental health problems before durable and meaningful improvements can occur.

An excellent way to motivate and mobilise people is by utilising existing sectoral groups which have networks that go down to and interact at the local level, such as traditional leaders, women's and youth groups, church, civic and business groups (e.g. Rotary, Lions etc.), social (e.g. YWCA, YMCA, scouts, guides etc.). This approach should be promoted by all health professionals.

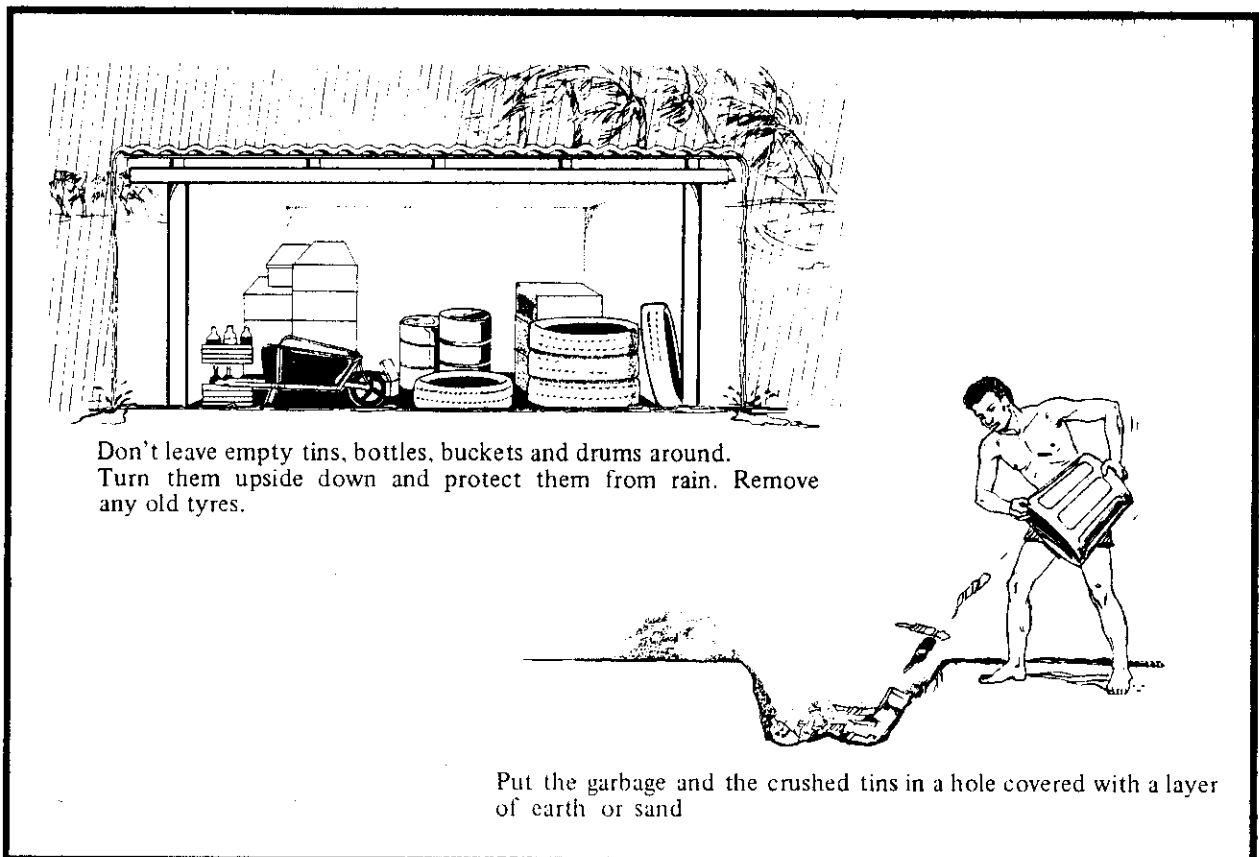
PREVENTION AND CONTROL OF DENGUE FEVER

Dengue fever can be controlled by stopping mosquitoes from spreading the dengue virus. This can be achieved in the following ways:

1. Reducing the number of mosquitoes

Measures that can be taken to reduce the number of mosquitoes include:

- Bury empty tins and bottles, and bury or burn other small containers and garbage (including empty coconut shells). Empty cans should be flattened before they are buried.
- Buckets, drums, canoes and other large containers should be turned over or covered from rain. Old tyres should be buried or covered.
- Open water tanks should be covered with rust-proof mosquito net (e.g. nylon) or other suitable mosquito-proof material.
- Make sure that soakaways, septic tanks and grease traps are tightly closed. Fill in any holes and cracks around their tops.
- If the house has roof gutters, make sure they are cleaned of leaves and other rubbish.
- Drain or fill in puddles and other areas where fresh water collects.
- Clean bush around the home.
- Change water in flower vases, potted plants and animal dishes once a week and scrub out containers before refilling.



2. Preventing infected mosquitoes from biting other people

People can screen living and sleeping areas to exclude mosquitoes. Use of mosquito nets is a wise precaution and also gives excellent protection against malarial mosquitoes. Mosquito nets impregnated with insecticide are particularly effective. Homes can be sprayed with an insecticide like Baygon (proprhexur). In addition, people can use insect repellent with DEET (N, N-diethyl-3 toluamide) or dimethyl phthalate as active ingredients. Mosquito coils and mosquito mats containing pyrethrum can be useful.

3. Preventing mosquitoes from biting infected people

People suspected of having dengue fever should be kept away from mosquitoes for at least 5 days after the start of their illness, using methods described above, particularly by staying in screened living and sleeping areas.

4. Epidemic and potential epidemic situations

An epidemic risk is considered to exist when any of the following are present:-

- The vector species is present or developing near one per cent of dwellings in an area;
- Several indigenous cases of dengue (at least five) are recorded in a single week;
- A virus serotype that has not been observed for over ten years in a locality reappears.

When an epidemic or risk situation is identified special measures should be taken. These include:

- A co-ordinated search for, and eradication of breeding sites;
- Breeding sites that cannot be eradicated should be treated with suitable larvicide, such as 'Abate';
- Fogging with insecticide may be useful to reduce mosquito numbers and help curtail an epidemic;
- Use of individual mosquito repellents may be appropriate for persons at particular risk, for example through their occupations.

ROLE OF THE SOUTH PACIFIC COMMISSION

The South Pacific Commission can provide assistance in the following ways:

- Providing technical advice on environmental health,
- Providing health education material and advice,
- Providing epidemiological advice and reports of dengue outbreaks in other parts of the South Pacific.

Produced by the SPC Community Health Services
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