

Beating Buruli in Victoria

Information about the mosquito control study

Through a substantial National Health and Medical Research Council grant, a collaborative partnership has been established between Victoria's Department of Health and Human Services (DHHS), the Doherty Institute, Barwon Health, Austin Health, CSIRO, Agribio, The University of Melbourne and Mornington Peninsula Shire, to undertake an ambitious and innovative two-year project to better understand how Buruli ulcer is transmitted and determine effective ways to prevent and reduce infections.

Based on a series of epidemiological, field and laboratory based studies, the 'Beating Buruli in Victoria' project hopes to actively disrupt disease transmission for the first time and lead to the development of evidence-based policies and guidelines that can help stop the spread of Buruli ulcer around Victoria.

Beating Buruli: the mosquito control study

Findings from a previous case-control study conducted in 2004 on the Bellarine Peninsula showed that getting bitten by mosquitoes and gardening were possible risk factors for getting Buruli ulcer, while wearing insect repellent protected against infection.

These findings are the basis for the second major research focus of the Beating Buruli in Victoria project, the Beating Buruli mosquito control study, which aims to investigate a range of risk and protective factors associated with Buruli ulcer.

Through the mosquito control study, the research team will test the idea that an effective mosquito elimination program will reduce Buruli ulcer in humans. It will use a cluster randomised control trial where small residential areas are identified and randomly selected to be either 'intervention' or 'control' areas.

Everybody living in the study areas will receive information on how to protect themselves from mosquito bites and the diseases mosquito bites might transmit – like Buruli ulcer. Some areas will also receive an intensive mosquito control program, which

will involve mosquito surveillance, pesticide administration and mosquito trapping.

The mosquito control study will be conducted over two years, targeting specific areas along the Mornington Peninsula where human cases of Buruli ulcer occur.

Who is conducting the study?

The study is being jointly conducted by the Department of Health and Human Services, Mornington Peninsula Shire Council and Barwon Health.

Where will the study take place?

The Beating Buruli mosquito control study will take place in areas of the Mornington Peninsula where the rates of Buruli ulcer are highest. This area extends from Tootgarook to Sorrento.

Small areas in the Mornington Peninsula which are home to around 230 residents (according to population census projections) have been identified and randomly selected to be either 'intervention' or 'control' areas.

How were these locations chosen?

Since 2012, there has been a significant increase in Buruli ulcer on the Mornington Peninsula and the south eastern bayside suburbs closer to Melbourne.

The highest risk is associated with the active transmission areas of Rye, Sorrento, Blairgowrie and Tootgarook on the Mornington Peninsula. There is a moderate risk associated with areas in the Bellarine Peninsula (Ocean Grove, Barwon Heads, Point Lonsdale, Queenscliff), Frankston and Seaford areas. There is a low but material risk associated with the rest of the Bellarine and Mornington Peninsula, the South Eastern Bayside suburbs and East Gippsland.

The mosquito control study will be targeting specific areas along the Mornington Peninsula where human cases of Buruli ulcer occur.

What is involved in the study?

Information on how people can protect themselves from mosquito bites will be delivered to all residents living in study areas of the Mornington Peninsula. Participants will be asked to take precautionary measures during the study period to reduce their risk of Buruli Ulcer.

Mosquito traps will be set up to monitor mosquito populations across the study area.

A mosquito control program will also take place in certain areas where a synthetic pyrethroid pesticide will be used in public areas, administered by fully trained Department of Health and Human Services staff or closely supervised contractors. Residents of these areas will also be given the opportunity to purchase mosquito traps and pesticide for home use.

Is this approach safe?

Yes. Synthetic pyrethroid pesticides have a long history of safe and effective use in mosquito control activities for public health, both in Victoria and overseas. All pesticide administration will occur as per standard Department of Health and Human Services protocols. Larvicide will also be used to remove mosquito larvae from some water sources. The larvicide is completely safe for humans and animals.

How will the results be used?

Using the information gathered through the mosquito control study, a comparison will be made between areas of very active mosquito control versus areas that only receive community information to see how the number of people who get Buruli ulcer in each area differs.

This information will help direct public health policy to ensure that the most effective actions are taken in areas where it is a problem.

When will this be happening?

The mosquito control will start in Spring 2019 and run until Autumn 2020. Results will continue to be collected until the end of 2020.

What information is being provided to residents?

All residents will receive information about how to protect themselves from mosquito bites and the diseases bites may transmit – like Buruli ulcer. Residents of areas where the mosquito control program

is implemented will also receive information about pesticide delivery and mosquito traps.

Ethics approval

The study has been approved by the Department of Health and Human Services Human Research Ethics Committee in December 2018 (project number 47520).

Privacy

The study team is committed to protecting the privacy and confidentiality of all patients and residents of the study area. All information collected will be stored securely and will not be shared with anyone not directly involved in the research. Any information collected will only be used for this particular study.

What is Buruli ulcer?

Buruli ulcer (also known as Bairnsdale ulcer) is an infection of skin and soft tissue caused by the bacterium *Mycobacterium ulcerans*. The toxin made by the bacteria attacks fat cells under the skin, which leads to localised swelling or the formation of a nodule (lump) and then an ulcer. At first, it can be mistaken for an insect or spider bite.

Where is Buruli ulcer found?

Buruli ulcer has been reported in 33 countries around the world. Affected areas include rural West Africa, Central Africa, New Guinea, Latin America and tropical regions of Asia.

In Australia, Buruli ulcer most commonly occurs in localised coastal areas of Victoria. It was first recognised in the Bairnsdale area of East Gippsland in the 1930s. Since then a growing number of cases have been reported in the Bellarine Peninsula and since 2012, the Mornington Peninsula. Buruli ulcer also occurs in the Daintree region of Far North Queensland and occasionally in other coastal regions of North Queensland and the Northern Territory.

Treatment advice

For disease information and advice please [visit the Health.Vic website](#) or speak to your GP.

Further information

- For patient information please visit the Better Health Channel: <https://www.betterhealth.vic.gov.au/health/healthyliving/Buruli-ulcer>

- For disease information and advice please [visit the Health.Vic website](#) or speak to an Infectious Diseases consultant at your nearest hospital.
- For more information about your patients public health investigation, contact infectious.diseases@dhhs.vic.gov.au
- For more information on the Beating Buruli: the mosquito control study please contact Dr Jane Oliver. Email jane.oliver@dhhs.vic.gov.au.
- If you have any ethical concerns regarding this project and would like to speak to an officer not involved in the study, contact the secretary of the DHHS Human Research Ethics Committee, Jeffery Chapman, on 03 9096 5239 or at jeffery.chapman@dhhs.vic.gov.au