

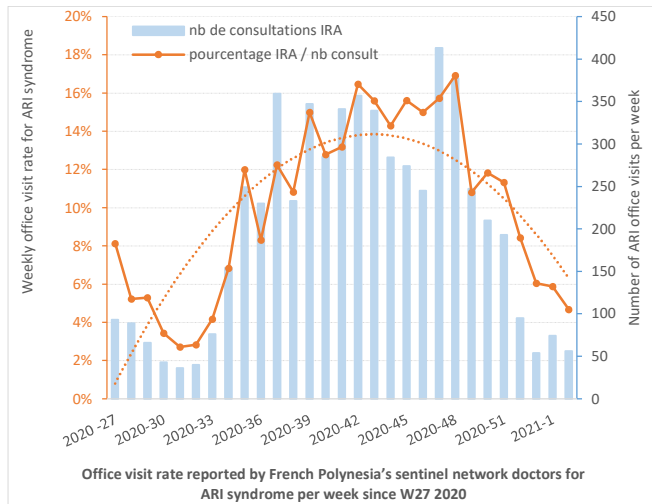


This bulletin has been produced using data from the sentinel network doctors and nurses, health department facilities (health clinics, infirmaries, outlying hospitals and mother and child centres), Taaone Hospital, private and public laboratories, and the Armed Forces.

ACUTE RESPIRATORY INFECTIONS (IRA)

ARI: abrupt onset of fever or a feeling of fever, respiratory or ENT symptoms, aches/pain, fatigue, headaches

ARI ► 130 cases reported by sentinel doctors



The percentage of office visits for ARI syndrome, which is in steady decline, is 4.5%, i.e. the lowest rate since mid-August 2020.

ARI surveillance protocol

Since Week 36, 210 samples collected as part of ARI surveillance have been tested using multiplex PCR. At least one respiratory pathogen was identified in 138 samples (65.7%).

The latest results show predominant and persistent rhinovirus transmission (44.8% of case: see table). One bacterium (*S. pneumoniae* and/or *H. influenzae*) was detected in 79 of the 210 samples (34.5% of the positive multiplex showed virus-bacteria co-infection).

semaine	36-2020	37-2020	38-2020	39-2020	40-2020	41-2020	42-2020	43-2020	44-2020	45-2020	46-2020	47-2020	48-2020	49-2020	50-2020	51-2020	52-2020	53-2020	1-2021	2-2021	Total
pathogène																					
Inf												1	2								3
ADV									1					2	1						4
HBoV								1												1	2
HRV	3	6	7	1	1	2	4	4	4	1	4	3	16	7	14	6		4	2	5	94
HEV													1			1					2
OC43	1																				1
NL63													1		1	1				1	4
VRS	1							1		1		1	2		2	1		2	1	1	13
CP																					1
HI		3	2	1	1	1		1	2		4	1	5	5	6	4		2		4	42
SP	1	3	3				1		2		2	3	5	2	5	3		1	3	3	37

■ Virus detected in at least 1 sample
■ Bacteria detected in at least 1 sample
■ No pathology detected

Influenza A/B virus (Inf), respiratory syncytial virus (RSV), adenovirus (Adv), bocavirus 1/2/3/4 (HBoV), coronavirus NL63 (NL63), coronavirus OC43 (OC43), human rhinovirus (HRV), enterovirus (HEV), Chlamydia pneumoniae (CP), Haemophilus influenzae (HI), Streptococcus pneumoniae (SP)

Pathogens detected per week as part of French Polynesia's ARI surveillance protocol, W36-2020 - W2-2021

NB: in mainland France, influenza surveillance indicators are stable at their base level **without any active virus transmission**

Acute respiratory infection prevention

- Wear a mask in cases of coughing
- Wash hands frequently
- Use disposable tissues, throw them away in a closed bin immediately after use and then wash hands.
- Limit close contacts, keep at a distance of at least 1 meter from other people
- Ensure proper air flow in living areas
- Fragile individuals (infants, the elderly or those at risk, pregnant women) must avoid all contact with people with symptoms.

! Influenza: vaccination is the most effective means of protection against the virus. Recommendations for the elderly, those suffering from certain chronic conditions (diabetes, cardiorespiratory insufficiency, etc.), pregnant women and all health professionals.

! COVID-19: in addition to vaccination, it is vital to strictly comply with prevention measures to protect yourself, your family and friends and limit active transmission of the virus in the fenua

DENGUE

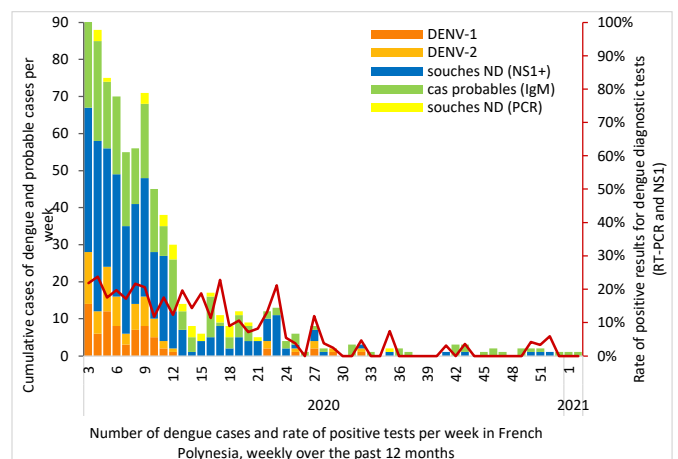
Dengue-like syndrome: abrupt onset of high fever ($\geq 38.5^{\circ}$ C) AND pain syndrome (headaches, joint or muscle pain) WITHOUT any portal of entry for infection (particularly respiratory) \Rightarrow Prescribe RT-PCR (or NS1 test) RT-PCR up to D7 after initial symptoms, and blood test after that period
Confirmed case: dengue-like syndrome virologically confirmed by a positive diagnostic test (RT-PCR/AgNS1)

Percentage of office visits for dengue-like syndromes recorded by sentinel network doctors has been low since the end of the second quarter 2020. There was a slight increase in W1 and W2 that did not exceed 4%.

Confirmed cases ► 0 of 55 requests - 2 probable cases (IgM+)

A total of 3330 cases of DENV-2 have been reported since April 2019.

Given available data, DENV-2 transmission remains at a low intensity.



Surveillance Pacific zone (DENV-1, DENV-2 and DENV-3)

Wallis and Futuna → DENV-2 (↘)

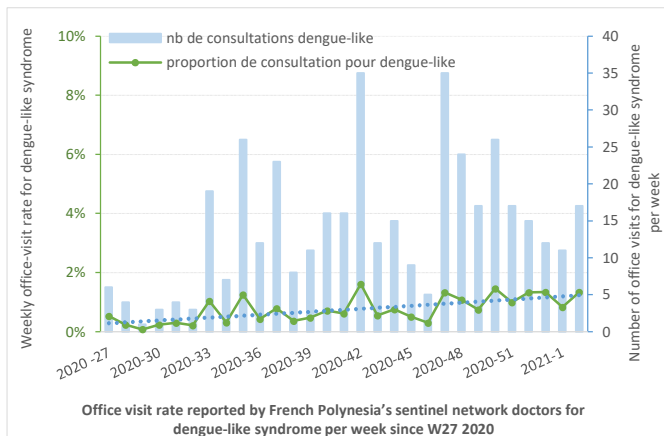
Marshall Islands → DENV-3 (↘)

Source: Pacific Community <https://www.spc.int>

Dengue fever prevention

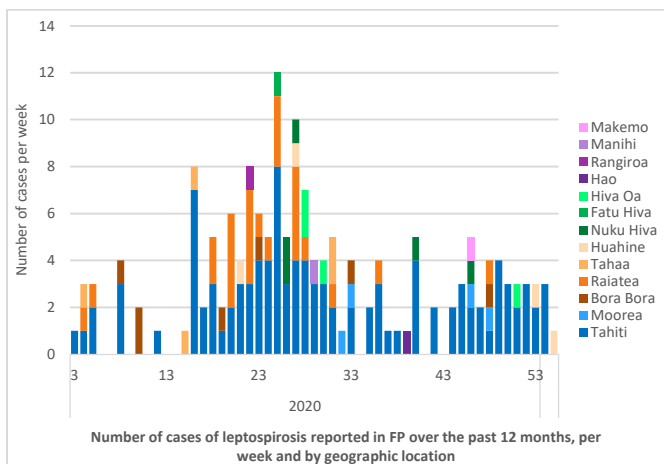
- Protect yourself against mosquito bites, particularly those people who have the virus so as to reduce the risk of secondary transmission to those around them (use mosquito nets).
- Control mosquito breeding sites by eliminating standing water in surroundings at least once a week (empty saucers, check how well gutters are flowing, etc.)
- Seek medical attention as soon as possible if symptoms appear.

! Such measures must be strengthened during periods of heavy rain.



LEPTOSPIROSIS

Confirmed cases ► 4 out of 67 requests



After peak levels from April to June, the number of cases of leptospirosis reported remains low, stable since the beginning of the second half of 2020, with an average of 3 cases per week.

Leptospirosis prevention

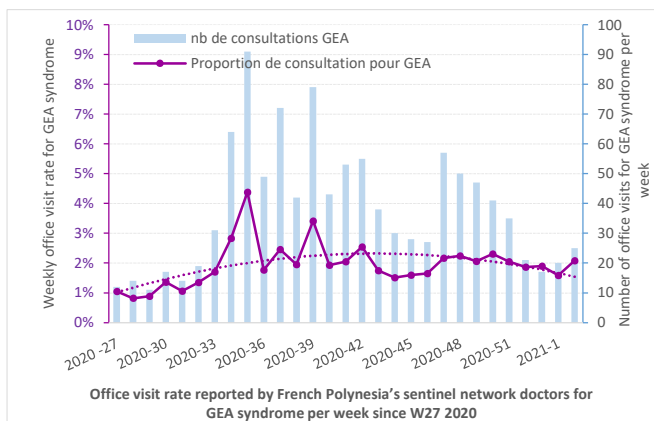
- Wear gloves and closed shoes/boots during risky activities (gardening/fa' a' apu, agriculture, caring for livestock, freshwater fishing).
- Do not swim in fresh water if you have any cuts or wounds and limit mucous membrane contact with water.
- Disinfect cuts and wounds after exposure to risk.
- Control rodents (waste management).

! Seek medical attention immediately in the event of symptoms and be sure to explain the risky activity involved.

GASTROENTERITIS (GEA) AND FOOD POISONING

Collective food-borne disease (FBD): appearance of at least two cases with similar symptoms, usually gastrointestinal, that can be linked to the same food source.

Source Santé Publique France : <https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-infectieuses-d-origine-alimentaire/toxi-infections-alimentaires-collectives>



The percentage of office visits for GEA syndrome reported by sentinel network doctors remains low (<3% since August)

No. of cases	W1	W2	Details
Diarrhoea/GEA	0	1	Salmonella sp report
FBD	0	0	

GEA and FBD prevention

- Always wash hands after using the toilet, touching soil or dirty objects and before handling food.
- Clean and disinfect toilets and door handles in a patient's surroundings on a daily basis.
- Keep cold foods at temperatures below 4° C and only eat well-cooked mince/ground meat and chicken.
- Uncooked egg dishes (mayonnaise, creams, chocolate mousse, pastries) must be stored at temperatures below 4° C and should be eaten quickly.

! In the event of heavy diarrhoea and/or vomiting, rehydrate the person and seek medical care.

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BACKGROUND

Angiostrongyliasis is a parasitic disease caused by a nematode, *Angiostrongylus cantonensis*, endemic in Asia and the Pacific, in particular. Humans are an accidental host and develop a neurological pathology with a type of eosinophilic meningitis and/or encephalitis whose outcomes are generally favourable in adults, but which sometimes lead to very severe forms in children with neurological damage or even death. *A. cantonensis* is the primary cause of eosinophilic meningitis (EM) in endemic areas.

Cases are reported on a regular basis in French Polynesia.

Source: E. Oehler, et al., "Angiostrongylus cantonensis eosinophilic meningitis: A clinical study of 42 consecutive cases in French Polynesia" *Parasitology International* · 63, June 2014, 544-549

A. cantonensis' primary host is rodents whose pulmonary and digestive arteries they infect during their adult stage. The eggs laid by females hatch in the pulmonary capillaries and then move to the trachea, are swallowed and leave the body through their droppings. The larvae mature in freshwater prawns, crabs, flatworms and other molluscs, particularly in the species *Achatina fulica* or Giant African snail, found everywhere in French Polynesia.



Figure 1 Adult *A. cantonensis* worm from the lungs of a rat. (Scale: 1mm)

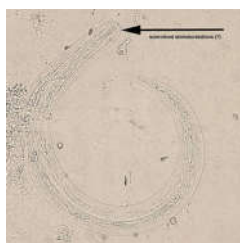


Figure 2: Infectious *A. cantonensis* larva from a slug's tissues. The arrows show sclerotised rhabdions (small rod-like chitin structures) at the front end.



Figure 3: *Achatina fulica* (adult size: about 12 cm)

Humans become infected by swallowing the larvae in contaminated raw or poorly cooked molluscs or in raw vegetables contaminated by shellfish secretions. Young children are mainly infected via their hands after touching land molluscs.

It should also be noted that in certain countries, *Achatina* snails are eaten, based on local beliefs, for therapeutic purposes.

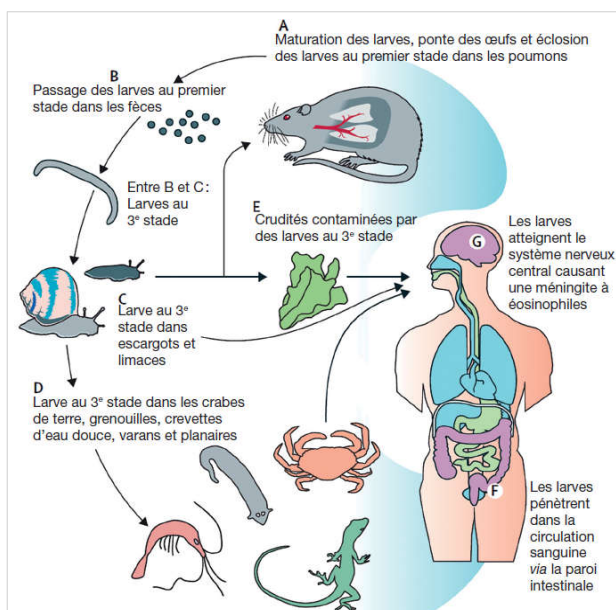


Figure 4: *A. cantonensis* life cycle

Source: Sexually Transmitted Disease Surveillance 2000 Supplement.

Clinical:

The main form of human angiostrongyliasis is eosinophilic meningitis (EM), with inconsistent encephalic symptoms.

There is a wide range of different forms but the main symptoms can be categorised into three clinical forms:

- Meningitis (frequent, very strong headaches) and meningo-radiculitis (headaches accompanied by eye-muscle or facial paralysis): 90% of cases
- Meningo-encephalitis: 10% of cases
- Ocular involvement (larva found in the eye, papillary swelling, detached or bleeding retina, blurred vision) : 1% of cases

Any unusual or intense headache or one that does not respond to pain relievers and is accompanied by hyper eosinophilic syndrome should lead to the suspicion of EM.

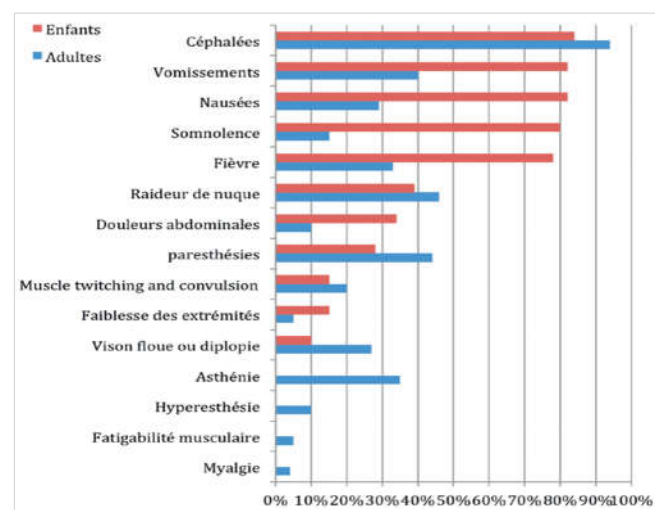


Figure 5: Respective frequencies of human Angiostrongyliasis symptoms in children and adults

Source: Wang et al., *Lancet Inf Dis*, 2008

Lab testing overview

- Hyperleukocytosis with 15 to 20% eosinophils (2/3 of cases)
- CSF: eosinophilic polymorphonuclear cell reaction between 20 and 70%; *A. cantonensis* identified (PCR or Western Blot)

Treatment:

- Symptoms: lumbar punctures, sometimes repeated and analgesic
 - Cortisone treatment in some cases
 - Laser surgery when eyes are affected
- No parasite treatment has currently proven effective.

Prevention:

Education on eating habits: do not eat certain raw invertebrate-based dishes (crab or shrimp). Wash lettuce and raw vegetables well (from fa' a' apu or store-bought).

! To make taioro or mithue, you should use freshwater shrimp that has been frozen for at least 48 hours.

Model prevention message:

Watch young children and eliminate snails from their immediate surroundings

Source: L. Epelboin - *L'Angiostrongylose humaine : une maladie tropicale négligée* RFL - Vol. 2016 - N° 483 - p. 45-55



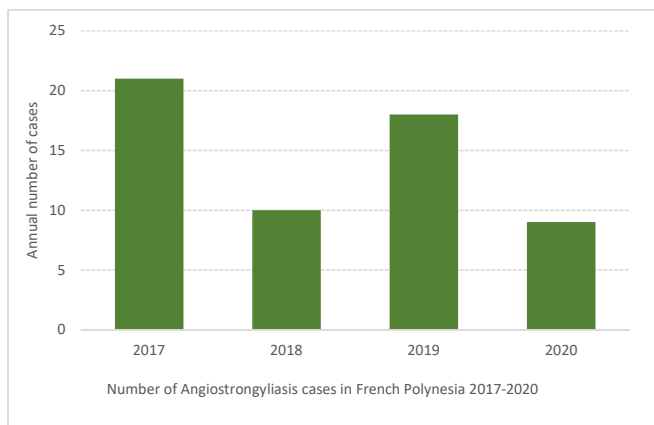
NOTIFIABLE DISEASE

Angiostrongyliasis is a notifiable disease (ND). All cases must be reported to the Health Department's Health Monitoring Office at veille@sante.gov.pf or by fax at 40 488 212.

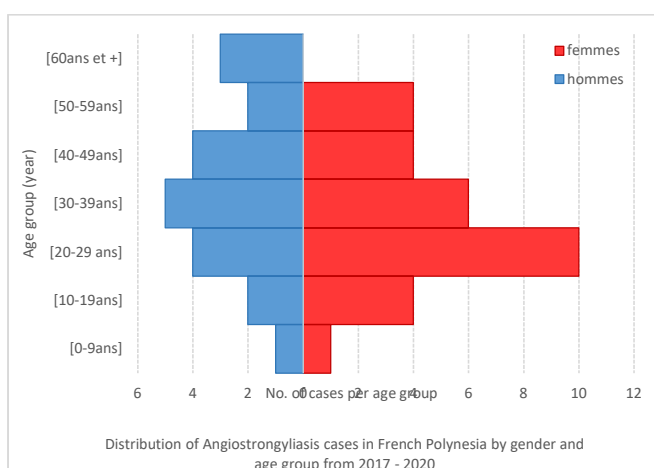
The NC sheet can be downloaded from the Health Department's website: <https://www.service-public.pf/dsp/wp-content/uploads/sites/12/2019/06/maladies-obligatoires-angiostrongylose-nerveuse.pdf>

ANGIOSTRONGYLIASIS IN FRENCH POLYNESIA: 2017-2020 REPORT

Between 2017 and 2020, 58 cases of *A. cantonensis* Angiostrongyliasis were confirmed.



Gender/age distribution



Age group distribution shows that all age groups were affected. However, it can be noted that over four years, only one case was reported in a child under 10. Children do not seem to be the population at risk in French Polynesia. In contrast, more than two-thirds of the cases were in people aged 20 to 49. The average age was 35.5 ans (4 to 76 years old).

Gender	No. of cases	%
Men	21	42%
Women	29	58%

Women were slightly more affected than men: *sex ratio* (M/F) of 0.72.

Reporting criteria:

Clinical picture that suggests meningitis together with:

- **Confirmed case:** PCR confirmation using CSF
- **Probable case:** Lab diagnosis via Western Blot on CSF or serum
- **Possible case:** Eosinophils > 10 cells or > 10% of the leukocytes in CSF

Laboratory diagnosis

After confirmation of eosinophilic meningitis, diagnosis is mainly based on identifying *A. cantonensis* in the CSF.

Out of the 58 cases reported:

- Hypereosinophilia syndrome → 45 cases.
- PCR positive in CSF → 31 cases
- Positive Western blot (CSF ± serum) → 24 cases.

Hospitalisation

- 51 out of 58 patients
- Average length of hospital stay: 3 days

Original hospital department	No. of patients	% of patients
Neurology	34	66.7%
Short-term hospital ward	7	13.7%
Paediatrics	4	7.8%
Internal medicine, haematology	3	5.9%
Ophthalmologist	3	5.9%

Clinical forms

The clinical data available for 48 patients, are given in detail below.

Symptoms	No. of patients	% of patients
Headaches	42	87.5%
Nausea / vomiting	17	35.4%
Meningeal syndrome	13	27.1%
Fever	13	27.1%
Stiff neck	13	27.1%
Paraesthesia/dysesthesia	11	22.9%
Pain/aches	8	16.7%
Ocular involvement (nerve VI diplopy)	7	14.6%
Photophobia	7	14.6%
Peripheral facial palsy (nerve VII)	4	8.3%
Focusing symptoms	4	8.3%

Origin of contamination

Of the 58 reported cases, 48 were investigated by the Health Monitoring Office.

In 43.1% of cases, eating dishes made from freshwater shrimp was identified as the cause of contamination (mitihue, taioro, fafaru).

Eating poorly cleaned lettuce or vegetables was identified as the probable cause of contamination in 10.3% of cases.

Conclusion

Clinicians should systematically mention this aetiology in response to symptoms that resemble eosinophilic meningitis.

Prevention is basically on an individual level but it is still important to educate the community.

Report produced in collaboration with CHPF clinicians and laboratory biologists.

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