



Government of **Western Australia**
Department of **Health**



THE AUSTRALASIAN COLLEGE
OF DERMATOLOGISTS

Delusional infestation – a management guide for General Practitioners

This booklet provides a summary of the epidemiology, clinical features, diagnosis and management of delusional infestation (DI).

Delusional infestation (DI) is a syndrome characterized by a strong and fixed belief that a person's skin and/or body (and rarely their close personal environment) is infested by small, occasionally vivid (or less frequently inanimate) pathogens, against all the medical evidence. In some instances, clients cannot pin-point their delusions referring to them as "things" or "creatures" that cause itching sensations on or in their skin.

Delusional Infestation has most commonly been referred to as delusional parasitosis or Morgellons syndrome amongst other names. However, it is particularly important **not** to refer to this condition as 'Morgellons', as this is likely to further encourage delusional patients.

The two core symptoms that characterise DI patients include:

- the rigid belief that they or their surroundings are infested by 'pathogens' (small, vivid, inanimate [rare], often 'new to science'); or
- abnormal sensations (itching, biting, crawling) in/on the skin, which can be explained by the above.

DI is divided into two main types, primary DI and secondary DI, based on the presence or absence of any underlying causes (toxic, psychiatric, brain pathology and general medical conditions).

The clinical course of DI is quite variable. It can be episodic, periodic or chronic in nature. primary DI has an insidious onset and a chronic course, usually lasting years.

Primary delusional infestation

In Primary DI, the delusions comprise the entire disease symptoms and there is no additional deterioration of basic mental functioning or personal thought processes beside the fixed, false belief that one is infested with parasites. This type is **not** the result of a general medical condition or other psychiatric disorder. These patients experience only cutaneous sensations, such as crawling, biting or stinging.

Primary DI is most prominent among middle aged to elderly women with few social contacts, no psychiatric history and normal cognitive and social function.

- *Primary DI* – most commonly seen in single individuals that believe they are infested with parasites/insects crawling or burrowing in or on their skin.

Other forms of Primary DI include:

- *Shared DI* – Primary DI can be carried over to one or more members of the family, close friends or colleagues, thus all share the belief that an infection is present.
- *DI by proxy* – patients believe someone or something other than themselves is infested (usually children, spouse or pets).
- *Double DI* – Primary DI patients who believe that they and someone or something else is infested, however, the other party does not share the same belief.

Secondary delusional infestation

Secondary DI is the sequela to another medical condition or substance use/abuse (medicinal or recreational). Secondary DI can be induced by:

- Psychiatric illness such as schizophrenia (abnormal social behaviour and failure to recognize what is real), major depression and/or intellectual disability.
- Toxic psychoses or recreational drug use such as cocaine, (Meth)amphetamine, pemoline (dopamine-releasing agent), alcohol, tetrahydrocannabinol (marijuana) etc. This is particularly common among younger males, presenting with acute and transient symptoms of DI following regular use of such substances.
- Medication induced psychoses (due to antibiotic, steroids, anti-inflammatory drugs, etc).
- Brain pathologies including dementia, stroke, tumour, infection, vascular encephalopathy or traumatic brain injury. Older patients suffering DI more commonly fit into this category.
- General medical conditions (secondary organic) such as renal or hepatic failure, cancer, systemic rheumatic illnesses, type 2 diabetics, menopause etc.

Characteristics of DI patients

- Most common in middle aged people, peaking between the ages of 40 and 60 years of age.

- Average female-to-male ratio is approximately 2:1 (1:1 in those younger than age 50 and 3:1 in those older than 50).
- Educational background does not appear to influence likelihood of disease. Sufferers range from not having completed a high school certificate to possessing a professional degree.
- Develop social isolation, often becoming self-employed and many will abandon families to avoid infesting them.
- May have experienced a recent emotional trauma such as job loss, divorce/separation.

Symptoms of delusional infestation

- Continuous complaints of itching, crawling, biting sensations, especially on or in the skin.
- Patients provide of pieces of skin, lint, tissue paper, and other samples of 'parasites'. This behaviour is very characteristic and has been termed 'the matchbox sign', 'baggies sign' or 'specimen sign' (Figure 1). Patients will collect multiple samples (both liquid and solids, including external and internal body fluids/solids).

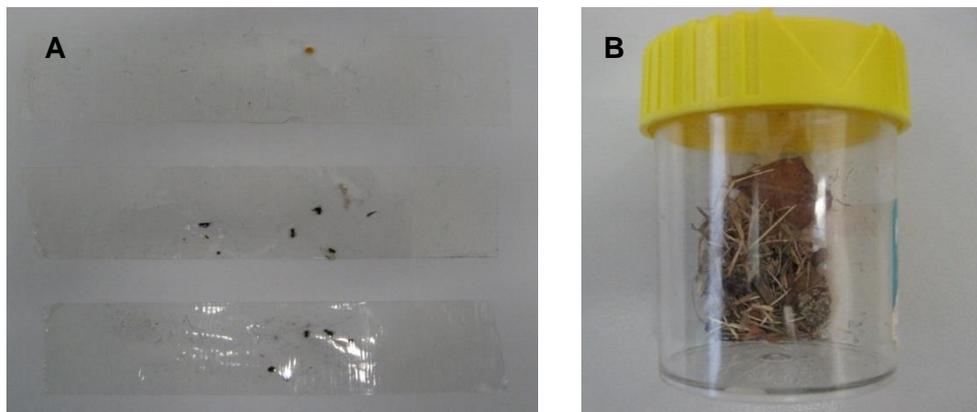


Figure 1: Typical specimens from DI patients sent for examination - A: Skin scrapings from patient's skin containing dust and lint often collected onto sticky tape. B: Urine collection container containing dust and plant matter.

- Patients will often volunteer extensive and elaborate descriptions of the pathogens or pests, including full descriptions of their life cycle and behaviours.
- In cases of 'intestinal parasites', DI patients may describe them as "unknown to medical science" and many explain bizarre and implausible life cycles. Patients often draw elaborate life cycles and morphologic stages of the 'parasites'.
- Patients will have an extraordinary knowledge of where these parasites are located in their bodies or exactly how many parasites they are infected with.
- Express desperation, severe sleep disturbance and weight loss.
- About 8-12% of patients with DI will have a friend or relative who shares their symptoms (Shared DI).

- Average duration of DI can be 3.13 years across the different forms of DI (median, 1 year but the duration of the illness can be days to 35 years).
- Visit numerous family doctors, dermatologists, microbiologists and tropical disease specialists ('doctor hopping').
- Strongly reject possibility of psychological or other explanations.
- Patients may present their healthy pets to veterinarians or their healthy children to paediatricians for check-ups.
- Patients may exhibit radical behaviour such as quitting their job, burning/destroying furniture, abandoning their home, repeatedly applying insecticides to body and using home remedies such as gasoline and kerosene to treat "infestations".
- Patients may harm their bodies by using mechanical force and instruments to kill or catch pathogens. They may also use other physical methods such as electric currents, fire, ice packs, fluids (washing, bathing, and soaking for hours), and radiation (e.g. solarium).
- In cases of infestation of the gut or body orifices, laxatives, enemas, ingestion or lavages with vinegar or chilli and/or manipulation with instruments often result in severe injuries.
- DI patients have been known to resort to suicide.

Characteristics of imaginary pathogens

Imaginary pathogens can vary greatly in size, colour, behaviour and source of infection. Description of pathogens could be specific (mites, scabies etc) or non-specific (vermin, insects etc) and are often 'too small to see'. In general, the colour of the "pathogen" is often described to be black, white, grey, skin-coloured or they could change colour, usually from red to green. These imaginary "pathogens" can 'hide, change shape, jump or fly' to evade detection, especially when a medical practitioner is examining the patient.

Approaching patients with delusional infestation

Please note that the following recommendations have not been widely researched. It is important that these recommendations are made only by an experienced General Practitioner (GP) or other experienced health practitioner. For all other parties involved, do not attempt to convince patients that the disorder is psychological.

DO:

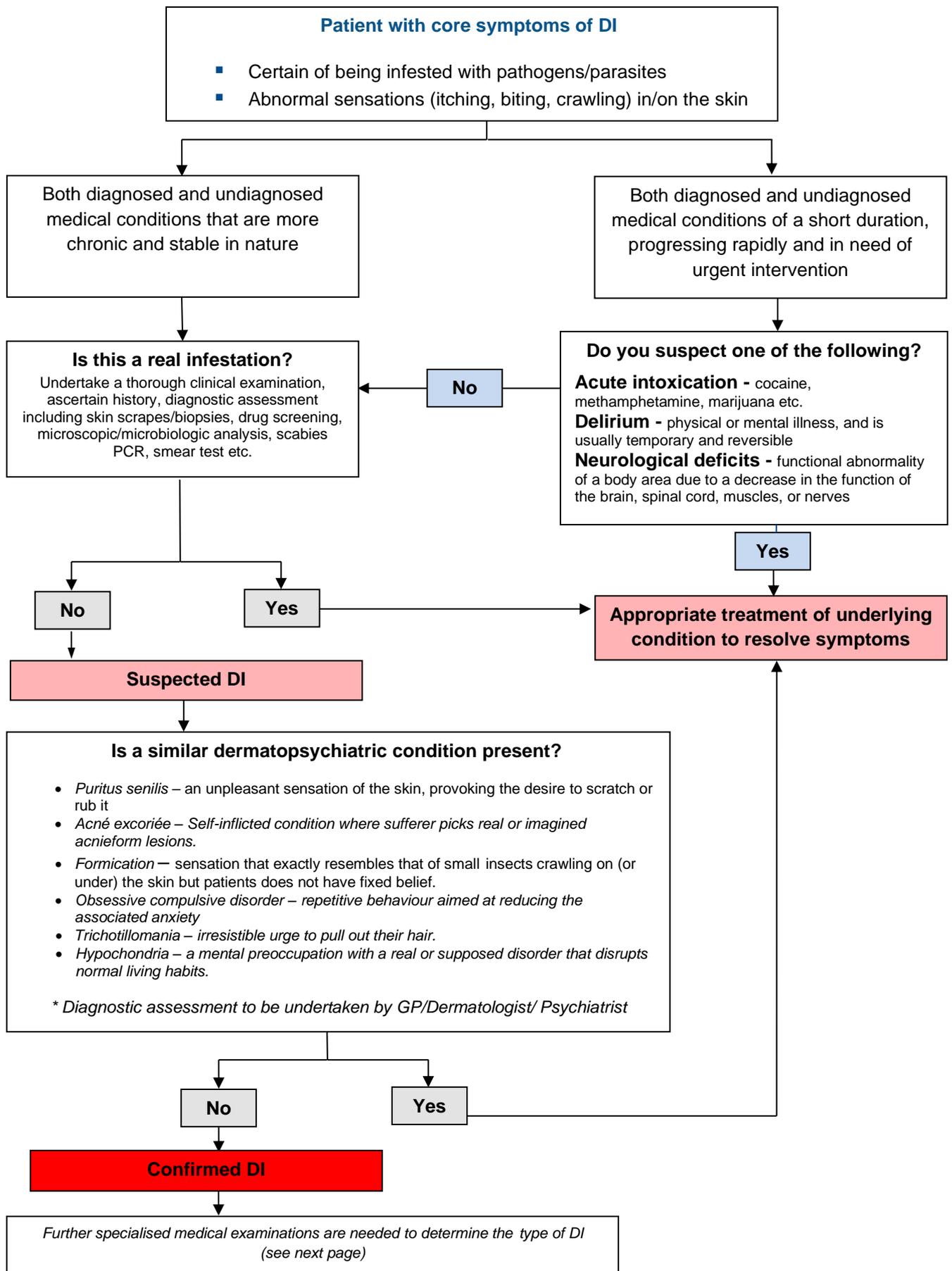
- Take time, annotate the patients history, including trips to tropical locations.
- Perform the diagnostic investigations needed (even if you are sure that the patient has no infection), as clues to underlying medical or psychiatric problems may be revealed.
- Check for triggering and contributing factors such as new medication or drug use.
- Examine all specimens carefully, or refer specimens to an appropriate laboratory who can then refer them on to the Medical Entomology team at the Department of Health for assistance with invertebrate organism identification.
- Be certain of the diagnosis.
- Acknowledge the patient's suffering, show empathy and offer to help to reduce distress.
- Paraphrase the symptoms ("you are itching"; "the sensations"; "the crawling" etc.) instead of reinforcing or questioning them.
- Indicate that you are familiar with the problem and that you were able to help other patients not instantly, but after a while.
- Use the term 'unexplained dermopathy' if the patients asks for the diagnosis.
- Indicate that this may be due to over-activity in the nervous system and the result of normal neuron-adaptive processes in the brain.
- Ask the patient how the condition has affected his or her life to gain further insight into the patient's history and mental state.
- Ask patients with despair and signs of depression about suicidal ideation and evaluate any risk to themselves or others.

DO NOT:

- Try to convince the patient that the disorder is psychological or question the patient's beliefs.
- Refer to this condition as "Morgellon's".
- Attempt immediate psychiatric referral or try to establish psychopharmacological therapy too soon.
- Use words like 'delusion(al)', 'psychotic', 'psychological', 'psychiatric' too early (this often leads to "doctor hopping").
- Use phrases like "calm down"; "be happy it's not infectious"; "it is only psychogenic" and so on as this will upset the patient.
- Overlook aggression against or toward other health care professionals.

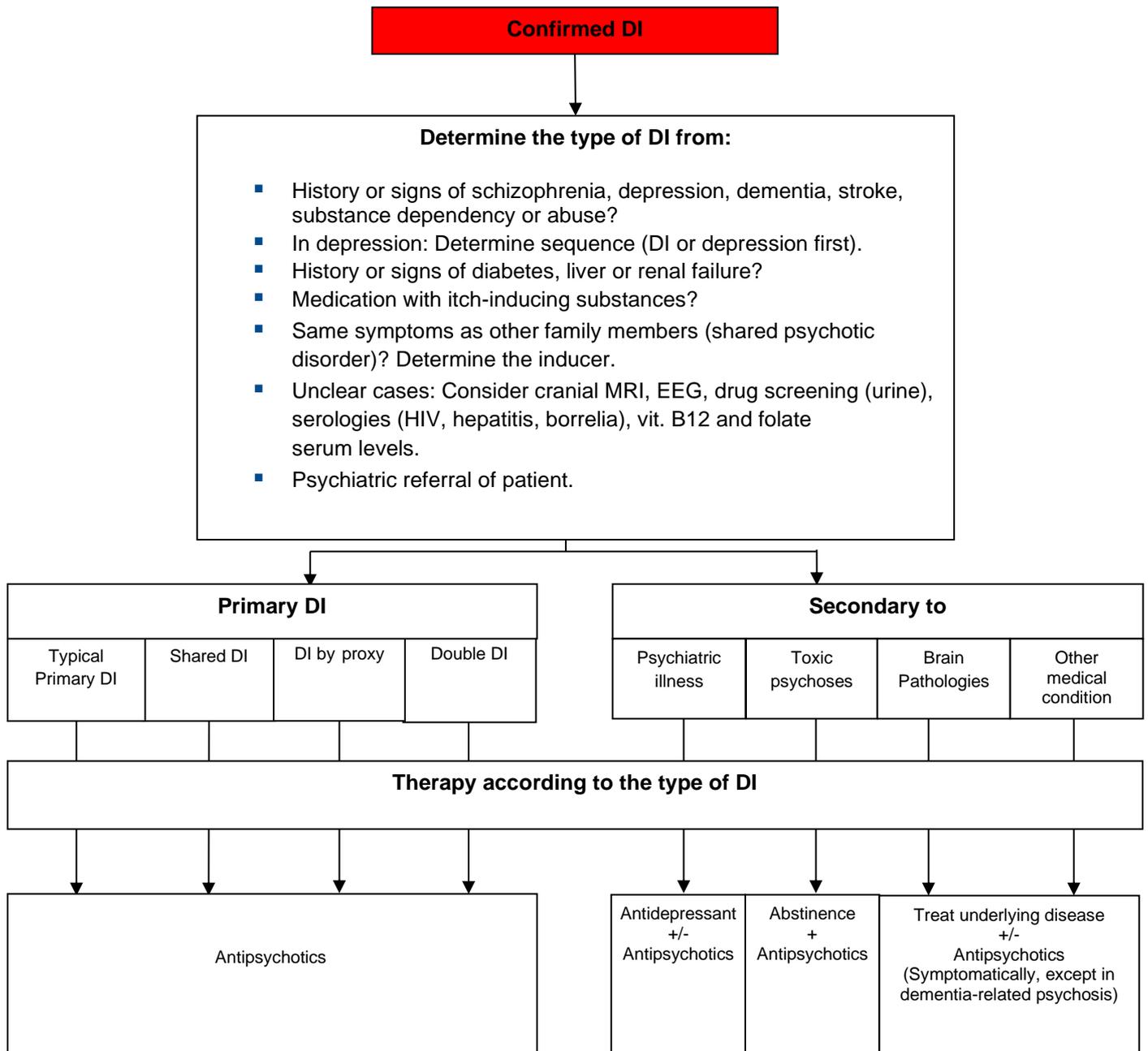
Diagnosis

The diagnosis of Delusional Infestation is a lengthy process involving the following steps:



Management

Once the diagnosis of DI has been confirmed and the patient referred to a psychiatrist, it is important to determine its exact nature. Primary DI is treated with antipsychotics, whereas secondary DI also requires the treatment of the underlying illness.



Laboratory tests that may help evaluate patients with DI

- Complete blood count and differential
- Erythrocyte sedimentation rate
- Serum glucose
- Serum electrolytes
- Liver function tests
- Albumin
- Total protein
- Thyroid function tests
- Serum total calcium
- Phosphorus
- Serum creatinine
- Blood urea nitrogen
- Vitamin B12
- Age-appropriate cancer screening
- Folate
- Iron studies
- Serum IgE (immunoglobulin E)
- Antinuclear antibody
- Rheumatoid factor
- C-reactive protein
- Urinalysis
- Urine toxicology
- Pregnancy test (if childbearing age)
- HIV (human immunodeficiency virus)
- Hepatitis C
- Rapid plasma reagin test for syphilis

List of medications and substances that can induce secondary delusional infestation

- Amphetamines
- Methamphetamines
- Cocaine and its derivatives
- Tetrahydrocannabinol (THC)
- Alcohol
- Polysubstance use
- Methylphenidate (attention deficit hyperactivity disorder [ADHD] medications)
- Armodafinil, modafinil (narcolepsy medications)
- Bromide intoxication
- Dopamine agonists (anti-Parkinson's medications)
- Phenzazine (monoamine oxidase inhibitors)
- Donepezil (cholinesterase inhibitors, Alzheimer's/dementia medications)
- Certain antibiotics (e.g. ciprofloxacin, clarithromycin)
- Corticosteroids
- Interferon α b2 plus ribavirin
- Topiramate (anticonvulsants)

Medical entomology laboratory identification service

There are a range of invertebrate organisms in the environment in WA that present a real, or potential, risk to public health. It is important to accurately identify them, to ensure the most appropriate control or treatment measures can be implemented.

The medical entomology laboratory identification service is specifically available to General Practitioners and pathology laboratories that need advice and/or assistance in identifying invertebrates of public health significance, found during sample collection, most commonly:

- Mosquitoes
- Lice
- Fleas
- Bedbugs
- Ticks
- Mites

Samples collected by licenced pest management technicians and local government environmental health representatives may also be accepted, if the specimen is collected from the surrounding environment of a client and not directly from their body.

For identification of any other insects/organisms that do not present a risk to public health, please direct enquiries to the Department of Primary Industries and Regional Development (DPIRD) [Pest and Disease Information Service \(PaDIS\)](#) (external site).

Important sample submissions information

Referring practitioners are strongly encouraged to review all samples provided to them by a patient/client, to ensure they are eligible for submission.

The following samples will be accepted:

- Samples submitted directly by a referring General Practitioner, laboratory, licenced pest management technician or local government environmental health representative; and
- Samples containing invertebrate organisms that present a real, or potential, risk to public health (e.g. mosquitoes, lice, fleas, bedbugs, ticks and mites).

The following samples will **NOT** be accepted:

- Samples containing, or suspected to contain, blood or body fluids.
- Samples submitted directly by patients.
- Samples that have not been appropriately stored/packaged by the referring practitioner prior to submission. (Please refer to the **Sample Transport and Submission Guidelines** overleaf for more information).
- Worms or worm-like specimens (please direct to a parasitologist or other appropriate laboratory).
- Other organisms or other materials or that do not present a risk to public health.

All samples submitted for identification need to be accompanied by a [Medical Entomology Laboratory Identification Request Form \(PDF\)](#). A copy of this form is also included overleaf.



MEDICAL ENTOMOLOGY LABORATORY IDENTIFICATION REQUEST FORM

Patient Information	Referring Laboratory or GP
Patient Name: <input type="text"/>	Name: <input type="text"/>
DOB: <input type="text"/>	Lab/Practice Name: <input type="text"/>
Gender: <input type="text"/>	Address: <input type="text"/>
Patient ID: <input type="text"/>	Phone: <input type="text"/>
Address: <input type="text"/>	Email: <input type="text"/>
Suburb: <input type="text"/>	

Details about the patient

Symptoms:

Any travel history:

Details about the sample

Nature of the sample:

From where was sample collected:

Other Relevant Information/Comments :

Details of the referring General Practitioner (if different from above):

As above

Name of Referring GP:

Phone number:

Address:

Email:

Submitter Name:

Submission Date:

Sample transport and submission guidelines

Specimen preparation

1. Ensure the specimen is eligible for submission through this service.
2. Complete the [Medical entomology laboratory identification request form](#) (ID Request Form).
3. Place specimen/s into an airtight plastic vial or container with a screw top lid (e.g. urine Jar).
4. To prevent damage during transport, store according to the following directions:

1. Place a piece of soft tissue to the bottom of the vial. Create a well space by pushing the tissue down.
2. Carefully place the specimen into the well space.
3. Fold the tissue edges gently over the specimen and screw the lid back on.



5. Clearly label the vial/collection container with the following information:

- Patient's Full Name
- Date of Birth
- Date the sample was collected.

6. Place the container into a sealable plastic bag (Ziploc or biohazard bag).
7. Seal the bag.
8. Place the bag with the sample container into a second sealable bag.
9. Place the ID Request Form into the outer bag (the second bag), ensuring it is not in direct contact with the sample container.
10. Seal the second bag.
11. Place sample bag into a foam esky, seal the esky with tape and keep in the fridge until a courier can be organised to transfer the sample to Medical Entomology.



Double bag the sample in sealable bags. Place ID Request Form in outerbag, where it is not in contact with the sample.

12. **Please call medical entomology on (08) 9285 5500 to advise of ID Request and to obtain postal address for courier, noting samples are not accepted directly from patients.**

For further assistance

Entomological identification services

Medical entomology

Environmental Health Directorate
Department of Health, Western Australia
Telephone: (08) 9285 5500
Email: medical.entomology@health.wa.gov.au

Pest and Disease Information Service

Department of Agriculture and Food, Western Australia
<https://www.agric.wa.gov.au/biosecurity/pest-and-disease-information-service-padis>

Dermatology departments for referrals

Royal Perth Hospital

Dermatology Department
Telephone: (08) 6477 5016

Fiona Stanley Hospital

Dermatology Department
Telephone: 1300 855 275

Sir Charles Gairdner Hospital

Dermatology Department
Telephone: (08) 9346 1490

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