



Human Parasites

Ryan S. Davis
Arthropod Diagnostician

Erin W. Hodgson
Extension Entomology Specialist

What You Should Know

- Very few insects are considered pests, and even fewer are actually parasites of humans.
- If you believe your body is infested with insects or other parasites, consult a physician immediately.
- Never try to remove parasites or treat yourself.

Entomologists often get "bug" samples for identification, including those that accidentally infest residences. In the United States, we are fortunate to have very few arthropods (e.g., insects, spiders, mites, ticks, etc.) that actually infest or feed on humans. Rarely, samples come from the human body, most often fleas, lice and mites. Table 1 lists the most common arthropods in North America that can infest or feed on humans. In addition, only a few arthropods infest and cause damage to structures, and include: carpenter ants, termites, powderpost beetles, carpet beetles, and clothes moths.



Fig. 1. Typical specimens collected by delusions of cleptoparasitosis sufferer. Glass contains rubbing alcohol, pieces of fiber, crumbs, sticks, and various particles. The client was convinced there were arthropods in this glass.¹

Steps for Diagnosing Human Parasites

If you believe that your body has been infested with parasites, or your residence is infested structural pests, the following steps should be taken to determine a proper diagnosis. In general, always use a professional to properly identify the pest and make management recommendations for long-term control.

If you believe your body is infested:

- Visit your family physician or dermatologist for a complete check-up.
- If recommended, have the doctor take skin samples of suspected infested area. DO NOT take skin samples yourself, because it could lead to personal injury and/or contamination of the sample.
- If a parasite is confirmed by the doctor, talk openly about possible treatments. If arthropods are not detected, be open-minded about other causes.

If you believe your residence is infested:

- Have the pest(s) positively identified by an entomologist or another professional BEFORE you make treatment decisions.
- Consult an entomologist on ways to prevent reinfestation and long-term control.
- If an arthropod or infestation can't be found, consider alternate causes for structural damage.

Table 1. Most common North American human parasites

Common Name	Scientific Name	Primary Host
human body louse	<i>Pediculus humanus humanus</i>	human
head louse	<i>Pediculus humanus capitus</i>	human; monkey
pubic louse	<i>Phthirus pubis</i>	human
bed bug	<i>Cimex lectularius</i>	human
bat bug	<i>Cimex pilosellus</i>	bat
poultry bug	<i>Haematosiphon inodorus</i>	poultry
swallow bug	<i>Oeciacus vicarius</i>	swallow nests
kissing bugs	<i>Triatominae</i> species	human; mammal
Oriental rat flea	<i>Xenopsylla cheopis</i>	rat; human
human flea	<i>Pulex irritans</i>	human
dog flea	<i>Ctenocephalides canis</i>	dog
cat flea	<i>Ctenocephalides felis</i>	cat
chigoe; sandflea	<i>Tunga penetrans</i>	human
scabies; itch mite	<i>Sarcoptes scabiei</i>	human
cat mange	<i>Notoedres cati</i>	cat; human
chicken mites	<i>Dermanyssus gallinae</i>	poultry; human
tropical rat mite	<i>Ornithonyssus bacoti</i>	rodent; human
hay itch mites	<i>Pyemotes tritici</i>	on grain; human
hard ticks	<i>Dermacentor</i> species	mammal; human
soft ticks	<i>Xodes</i> species	mammal; human
lone star tick	<i>Amblyomma americanum</i>	mammal; human
brown dog tick	<i>Rhipicephalus sanguineus</i>	mammal; human

Negative Diagnosis: Now What?

Sometimes doctors, dermatologists and entomologists find no causal agent behind your bodily or residential arthropod infestation, but you are still afflicted with the symptomology of infestation. If you are not satisfied with a diagnosis it is always advisable to seek a second opinion; however, second opinions may result in the same diagnosis. If you enter a cycle where you seek out new doctors, contact new entomologists and/or submit many samples that never yield desired diagnoses, call many pest-control companies to inspect and/or spray insecticides, or have attempted self-treatment, you must consider other causes for your infestation. Other causal agents commonly misdiagnosed as parasitic infestations include environmental, medical, or psychological problems. Below is a brief discussion of non-arthropod causes for symptoms of bodily or home infestation.

Entomophobia is defined as a persistent, excessive and irrational fear of insects.

Illusions of Parasitosis² when the symptomology of a person's believed infestation is environmental. Examples of this include fiberglass or other fibers that cause itching, direct air-flow to some part of the body causing drying and itching, and allergens/detergents in the house that cause rashes. Commonly, this type of illusion is shared by many people (up to 150 in one account) sharing close quarters (common at home or work) who are all convinced that they are infested. For illusions of parasitosis, simply modifying the environmental problem may resolve the suspected arthropod infestation. Since this type of illusion is usually fixable, it will not be covered in any more detail in this fact sheet. If arthropods are not found in your home or any of your submitted samples, environmental factors should be ruled out before pursuing further treatment.

Delusions of Parasitosis when people believe they are being bitten or infested by arthropods, but no parasites are present. If this is a possibility there are ways to treat your symptoms so that you may return to living a pest-free life!

Delusions of Cleptoparasitosis⁴ not as common as delusions of parasitosis. This occurs when people believe that their house or belongings are infested with arthropods (Fig. 1). Symptoms, causes and treatments of delusions of cleptoparasitosis are similar to delusions of parasitosis.

Delusions of Parasitosis

If you are certain that you are infested with bugs, but doctors and entomologists do not agree with you, there are other possibilities of the origins of your infestation. A delusion is defined as a fixed belief that is held to be true despite evidence to the contrary (for example, you believe you are infested, but doctors and entomologists say you are not). The problem is that your symptoms are real, but you believe the cause is one thing (arthropods) when in reality it might be caused by something else (medication interactions or side effects, illness, psychological disorders, traumatic experiences in your past, stress, or even guilt). Please refer to Table 2 to see the broad range of medical conditions that may cause sensations like inflammation of the skin (dermatitis), abnormal redness of the skin (erythema), sensations of bugs crawling on the skin (formication), sensations of prickling, tingling or creeping on the skin (paresthesia), itching (pruritus) and wound or cut marks from scratching (urticaria). The sensation of parasites could be from a non-arthropod source.

Table 2. Common medical conditions and side effects³

Condition	erythema	paresthesia	pruritus	rash	urticaria
AIDS	x	x	x	-	x
anemia	x	x	-	x	x
autoimmune disease	-	-	x	-	x
carbon monoxide	-	-	x	-	x
carcinoma	x	x	-	x	x
cholestasis	-	x	x	-	x
cirrhosis	-	x	-	-	x
depression	x	x	-	x	-
diabetes mellitus	x	x	-	x	x
fluoride poisoning	x	-	x	x	-
heavy metal toxicity	x	x	-	x	-
hemochromatosis	-	x	-	-	x
hepatic disease	-	x	-	x	x
hyperthyroidism	x	x	x	x	x
hypoglycemia	x	-	x	x	x
hypothyroidism	-	x	-	x	x
lupus	-	-	x	-	x
lymphoma	-	x	x	x	-
menopause	x	x	-	-	-
multiple sclerosis	x	x	-	x	-
neoplasia	-	-	x	x	x
niacin overdose	-	x	x	-	x
rheumatoid arthritis	x	-	x	x	x
stress	x	x	x	x	-
uremia	x	x	-	-	-

Delusions of Parasitosis Continued

Sometimes medical conditions alone do not cause parasitosis-like symptoms. For some people, prescription and non-prescription drugs, like cocaine or methamphetamines, can cause irritating dermatological symptoms. Occasionally, people may be taking multiple medications that cause negative interactions.

Table 3. Forty-nine most commonly prescribed medications in the United States and their side effects³

Brand Name	Generic Name	Drug Type	erythema	paresthesia	pruritus	rash	urticaria
Bancap, Lorcet	Hydrocodone/APAP	analgesic	-	-	X	X	X
Darvocet, Darvon	Propoxyphene N/APAP	analgesic	-	-	-	X	-
Motrin, Advil	Ibuprofen	analgesic	X	X	X	X	X
Relafen	Nabumetone	analgesic	X	X	X	X	X
Tylenol with Codeine	Acetaminophen/Codeine	analgesic	-	-	X	-	-
Ultram	Tramadol	analgesic	-	X	X	X	X
Norvasc	Amlodipine	angina	X	X	X	X	X
Prednisone, Panasol	Prednisone	antiarthritic	X	-	-	-	X
Bactrim	Trimeth/Sulfameth	antibiotic	-	-	-	X	X
Biaxin	Clarithromycin	antibiotic	-	-	-	X	X
Cefzil	Cefprozil	antibiotic	X	-	X	X	X
Cipro	Ciprofloxacin	antibiotic	X	X	X	X	X
Keflex	Cephalexin	antibiotic	X	-	X	X	X
Trimox, Augmentin	Amoxicillin	antibiotic	X	X	X	X	X
Veetids	Penicillin VK	antibiotic	-	-	-	-	X
Zithromax	Azithromycin	antibiotic	-	-	-	X	-
Dilantin	Phenytoin	anticonvulsant	X	-	-	X	-
Elavil	Amitriptyline	antidepressant	-	X	-	X	X
Paxil	Paroxetine	antidepressant	X	X	X	X	X
Prozac	Fluoxetine	antidepressant	X	X	X	X	X
Zoloft	Sertraline	antidepressant	X	X	X	X	X
Claritin	Loratadine	antihistamine	X	X	X	X	X
Albuterol, Ventolin	Albuterol	bronchodilator	X	-	-	X	X
Dyazide	Triamterene/HCTZ	cardiovascular	-	-	-	X	-
Hytrin	Terazosin	cardiovascular	-	X	X	X	-
Lanoxin	Digoxin	cardiovascular	-	-	-	X	-
Mevacor	Lovastatin	cardiovascular	X	-	X	X	X
Pravachol	Pravastatin	cardiovascular	X	X	X	X	X
Zocor	Simvastatin	cardiovascular	X	X	X	-	X
Glucophage	Metformin	diabetes	-	-	-	X	-
Glucotrol	Glipizide	diabetes	X	X	X	X	X
Humulin	Insulin-NPH	diabetes	-	-	-	X	-
Premarin, Prempro	Estrogens	estrogen	X	-	-	X	-
Accupril	Quinapril	hypertension	-	-	X	X	-
Cardizem	Diltiazem	hypertension	X	X	X	X	X
Cardura	Doxazosin	hypertension	-	X	X	X	-
Furosemide, Lasix	Furosemide	hypertension	X	X	X	X	X
Lotensin	Benazepril	hypertension	-	X	X	X	-
Procardia, Adalat	Nifedipine	hypertension	-	X	X	X	X
Tenormin, Atenolol	Atenolol	hypertension	X	-	-	X	-
Vasotec	Enalapril	hypertension	X	X	X	X	X
Zestril, Prinivil	Lisinopril	hypertension	X	X	X	X	X
Ambien	Zolpidem	sedative	-	X	-	X	X
Xanax	Alprazolam	sedative	X	-	-	-	X
Coumadin	Warfarin	thrombolytic	-	X	-	X	X
Synthroid, Levoxyl	Levothyroxine	thyroid	-	-	-	X	X
Prilosec	Omeprazole	ulcer	X	X	X	X	X
Zantac	Ranitidine	ulcer	X	-	-	X	-
Pepcid	Famotidine	ulcer	-	X	X	X	X

Delusions of Parasitosis Continued

If you do not take any medications, nor have any serious medical issues listed above, then the problem may be of a psychological origin. If all options have already been examined, and the cycle of doctors, entomologists, and pest control companies continues without end, it is highly recommended that a psychologist be seen. There are many underlying issues like depression, dementia, anxiety, and stress that can lead to delusions of parasitosis. With therapy, and treating the underlying problems, full recovery can be attained. There are also prescription medications available which can alleviate your symptoms. A candid visit to your psychologist, in most cases, will lead to treatment and recovery.

Human Parasites For Entomologists

An entomologist's role is to positively identify arthropods found in and around human structures and property, and make management recommendations when necessary. If human or animal parasites (e.g., fleas, lice, etc.) are detected, a physician or veterinarian should be consulted for treatment. Entomologists or other professional inspectors are not allowed to diagnose medical conditions, even if those conditions directly or indirectly involve arthropods. Sometimes, samples simply do not contain any arthropods, and therefore identification is impossible. Furthermore, no action can be recommended except to seek the advice of a qualified physician. Sometimes the entomologists' diagnosis, positive or negative, is not agreed with by the client. This is especially true for an apparently on-going parasitic infestation with no supporting evidence.

As entomologists, we can only examine samples and identify the presence or absence of arthropods. We are not qualified to make other suggestions for medical or

environmental causes. It is important that we recognize delusions of parasitosis symptoms in order to better help those individuals. People with delusions of parasitosis often fail to provide actual specimens, but can provide vivid and detailed descriptions of their pests:

- black and white, but change colors
- jump or fly
- have eight little legs and a small sucker
- half moon shape, like the end of a fingernail
- moth-like creatures
- waxy looking fuzz balls
- granules about the size of a grain of salt
- long hairs that move independently
- tiny white worm with a brown bob on its head
- worm-like coating around the hair root, with a black bulb attached

Although not as common, sometimes the delusion can manifest itself in the form of a household infestation instead of on the body, called delusions of cleptoparasitosis. Some common attributes of delusions of cleptoparasitosis sufferers are listed below.

- strong conviction of home arthropod infestation, but none are present
- emotional trauma, especially from marital problems
- submit samples of fiber, cloth, hairs, scabs as possible pests
- have multiple home inspections examining arthropod-damaged wood, but damage is normal wear-and-tear
- multiple phone calls or office visits which usually escalate in hostility as a desired diagnosis is not reached
- sufferers are usually older individuals, especially females
- symptomology is similar to, or may progress to those commonly seen in delusions of parasitosis
- client suddenly breaks-off communication

¹ Image courtesy of Erin Hodgson, Utah State University Extension.

² William Waldron. 1972. The Entomologist and Illusions of Parasitosis. *The Western Journal of Medicine*. Vol. 117 No. 2, pp. 76-78.

³ Tables were recreated from "Delusory Parasitosis" with permission from Nancy C. Hinkle. *American Entomologist*, Vol. 46 No. 1, pp. 17-25.

⁴ Kenneth J. Grace and David L. Wood. 1987. Delusory Cleptoparasitosis: Delusions of Arthropod Infestation in the Home. *Pan-Pacific Entomologist*, Vol. 63 No. 1, pp. 1-4.

Precautionary Statement: All pesticides have benefits and risks, however following the label will maximize the benefits and reduce risks. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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