DHA TELEHEALTH CLINICAL GUIDELINES

FOR VIRTUAL MANAGEMENT

OF INSECT BITE – 44

Version 2

Issue date: 21/02/2024

Effective date: 21/04/2024

Health Policies and Standards Department

Health Regulation Sector (2024)

INTRODUCTION

Health Regulation Sector (HRS) forms an integral part of Dubai Health Authority (DHA) and is mandated by DHA Law No. (14) of the year (2021) amending some clauses of law No. (6) of 2018 pertaining to the Dubai Health Authority (DHA), to undertake several functions including but not limited to:

- Developing regulation, policy, standards, guidelines to improve quality and patient safety and promote the growth and development of the health sector;
- Licensure and inspection of health facilities as well as healthcare professionals and ensuring compliance to best practice;
- Managing patient complaints and assuring patient and physician rights are upheld;
- Governing the use of narcotics, controlled and semi-controlled medications;
- Strengthening health tourism and assuring ongoing growth; and
- Assuring management of health informatics, e-health and promoting innovation.

The DHA Telehealth Clinical Guidelines aim to fulfil the following overarching DHA Strategic Priorities (2026):

- Pioneering Human-centered health system to promote trust, safety, quality and care for patients and their families.
- Make Dubai a lighthouse for healthcare governance, integration and regulation.

- Leading global efforts to combat epidemics and infectious diseases and prepare for disasters.
- Pioneering prevention efforts against non-communicable diseases.
- Become a global digital health hub.
- Foster healthcare education, research and innovation.

ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Guideline in collaboration with Subject Matter Experts and would like to acknowledge and thank these health professionals for their dedication toward improving quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

Telehealth is based on Evidence Based Practice (EBP) which is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence and guidelines from systematic research

This guideline is presented in the format comprising of clinical history/symptoms, differential diagnosis, investigations and management. Identification of 'Red Flags' or serious conditions associated with the disease is an essential part of this telehealth guideline as it aids the physician to manage patients safely and appropriately by referrals to ER, family physicians or specialists for a face to face management.

DEFINITIONS/ABBREVIATIONS

Virtual Clinical Assessment: Is the evaluation of the patient's medical condition virtually via telephone or video call consultations, which may include one or more of the following: patient medical history, physical examination and diagnostic investigations.

Patient: The person who receives the healthcare services or the medical investigation or treatment provided by a DHA licensed healthcare professional.

ABBREVIATIONS

DHA	:	Dubai Health Authority
EBP	:	Evidence Based Practice
ER	:	Emergency Room
KPI	:	Key Performance Indicator

1. BACKGROUND

1.1. Introduction

1.1.1. The bites of insects and other arthropods may be a minor trouble or may lead to serious medical problems, including transmission of insect-borne illnesses and severe allergic reactions.

1.1.2. Exposure to biting or stinging insects or to their remains can range in severity from benign or barely noticeable to life threatening.

2. SCOPE

2.1. Telehealth services in DHA licensed Health Facilities.

3. PURPOSE

3.1. To support the implementation of Telehealth services for patients with Insect Bites in Dubai Health Authority (DHA) licensed Health Facilities

4. APPLICABILITY

4.1. DHA licensed physicians and health facilities providing Telehealth services.

4.2. Exclusion for Telehealth services are as follows

4.2.1. Emergency cases where immediate intervention or referral is required.

4.2.2. Prescribe Narcotics, Controlled or Semi-Controlled medications.

5. OVERVIEW OF ARTHROPOD BITES

5.1. Arthropods that commonly bite humans include

5.1.1. Mosquitoes

5.1.2. Bed bugs

5.1.3. Ticks

5.1.4. Wasps and bees

5.1.5. Red back spider

5.1.6. Fire ants

5.2. Diagnosis and treatment of these conditions through telehealth services will required either video consultation or viewing a high-resolution pictures sent by the patient

6. MOSQUITOES

6.1. The most commonly occurring insect bites are inflicted by mosquitoes, of the family. Only female mosquitoes feed on blood. Mosquitoes may be found near their breeding sites, which include a wide variety of stagnant water sources, since they need an aquatic environment to complete their life cycle.

6.2. Local reactions

6.2.1. Local pain

6.2.2. Pruritus

6.2.3. Erythema

6.3. Common reactions

6.3.1. Include an immediate wheal-and-flare response that peaks at about 20 minutes and/or an indurated pruritic papule that peaks at 2 to 3 days and resolves over the ensuing days to weeks

6.3.2. Sometimes large indurated lesions may occur

6.3.3. Some people, particularly young children, can develop very dramatic swelling surrounding the site of the bite, heat, redness, itching, and pain, which may be accompanied by low-grade fever. This is known as "Skeeter syndrome" and can be mistaken for and treated as cellulitis.

6.3.4. However, large local reactions develop within hours after a bite, while cellulitis develops over days. In many patients, these exaggerated local reactions improve with age, presumably due to natural desensitization, and can be managed with prophylactic antihistamines during the summer months.

6.4. Systemic allergic reactions

6.4.1. Rarely, patients can develop classical anaphylaxis in response to mosquito bites, presenting with some combination of generalized urticaria, angioedema, wheezing, vomiting, hypotension, loss of consciousness, or other manifestations of anaphylaxis.

6.5. Diseases transmitted by mosquitoes worldwide include

6.5.1. Malaria

6.5.2. Yellow fever

6.5.3. Dengue and dengue hemorrhagic fever

6.5.4. Lymphatic filariasis, chikungunya, and other arboviruses.

6.5.5. Mosquitoes do not transmit human immunodeficiency virus (HIV) infection, since the virus neither survives nor replicates well in mosquitoes, and blood from one meal is not flushed into the next host.

6.6. Prevention

6.6.1. Guidelines on vector control on a global level, issued by the World Health Organization focus on reducing or eliminating larval habitats.

6.6.2. On an individual level, patients should be instructed to apply insect repellents that contain active ingredients such as N,N-diethryl-3-methylbenzamide (DEET), oil of lemon eucalyptus.

6.6.3. Additional protective measures include the use of protective covers such as screens on windows and netting over beds.

6.7. Treatment

6.8. Wash the area with soap and water

6.9. A cold compress or ice may help reduce itching and swelling

6.10. Calamine lotion, hydrocortisone cream, oral antihistamine will help relieve the itch

7. BED BUGS

7.1. Bed bugs tuck away in clothing and shoes or easily migrate through walls of shared housing. Bed bugs can usually be found initially in the inner workings or the base of box springs but also like to hide in mattresses, under baseboards, along crevices in the walls, in vents, and even behind picture frames. Infestations can be identified by faecal spotting.

7.2. Clinical manifestations

7.2.1. When bitten, cutaneous reactions usually appear within several hours of the bite, and patients usually notice these reactions the morning after having been bitten.

7.2.2. The classic appearance of a bedbug bite reaction is a 2 to 5 mm erythematous papule or wheal with a central hemorrhagic punctum

7.2.3. Skin reactions in a linear configuration

7.2.4. Some patients have only asymptomatic, purpuric macules at the sites of bites

7.2.5. Bedbug bites may also appear as papular urticaria or may mimic urticaria

7.2.6. Reactions may be noticed upon awakening or one to several days after the bites. Occasionally, the onset of a skin reaction is delayed for up to 10 days

7.2.7. Affected patients may experience varying degrees of stress, anxiety, and depression and this may include:

a. Rejection by friends, collages or others in the community.

b. Patients may isolate themselves, avoiding family and friends, fearing spread of the infestation

7.3. Complications

7.3.1. Occasionally, bedbug bites can become secondarily infected, producing impetigo or cellulitis. Excoriated or impetiginized areas may take several weeks to resolve

7.3.2. Extreme infestations associated with multiple repeated feedings by bedbugs may result in anaemia

7.3.3. Although pathogens such as hepatitis B virus, methicillin-resistant *Staphylococcus aureus* have been detected in bedbugs, transmission of these diseases has neither been clinically demonstrated nor observed. Bedbugs do not appear to be competent vectors for human disease

7.4. Diagnosis

7.4.1. Features that support a diagnosis of bedbugs include:

a. Potential exposure to bedbugs (recent travel, residence within building with known bedbug infestation)

b. Cohabitants with similar symptoms

7.4.2. Confirming the diagnosis

a. The presence of bedbugs is necessary to confirm the diagnosis. A pest control service is the preferred method for detecting bedbugs. Detection involves careful visual inspection of typical harborages.

b. Bedbugs are most likely to be found near feeding sites (eg, sleeping areas) but may be found in other locations.

c. Small infestations of bedbugs are difficult to detect and may be suspected if specks of feces or blood are found on linens, mattresses, or behind wallpaper. Caste skins from molting bedbugs also may be found.

d. Bedbug infestation can produce a recognizable pungent odor that supports the diagnosis.

7.5. Management

7.5.1. Bedbug bites spontaneously resolve, and treatment of the bites is not mandatory. However, significant pruritus is common and may be improved with a low- or medium-potency topical corticosteroid (eg, triamcinolone acetonide 0.1%), an oral antihistamine, or both.

7.5.2. Patients should maintain good hygiene and avoid scratching to prevent infection.

7.5.3. Psychologic support — Victims of bedbug infestations may experience varying degrees of stress, anxiety, and depression. Clinicians should inquire about such symptoms and provide counselling, referral, or treatment, if indicated.

7.6. Treatment

7.6.1. Wash the area with soap and water

7.6.2. A cold compress or ice may help reduce itching and swelling

7.6.3. Calamine lotion, hydrocortisone cream, oral antihistamine will help relieve the itch

7.7. Eradication and Prevention:

7.7.1. Eradication — Once infestation is confirmed through the detection and correct identification of bedbugs, measures to eradicate infestation can be implemented

7.7.2. Eradication of bedbugs is difficult. Control of infestations requires an experienced pest management professional. Victims should refrain from attempting control measures themselves.

7.7.3. Prevention - Certain measures may be helpful for preventing bedbug infestation

a. Visual examination of hotel rooms or other new sleeping areas for bedbugs or bedbug faeces prior to use, with particular attention to mattress cords and crevices in box springs.

b. Placement of luggage on a luggage rack or away from the bed while traveling. Placement of worn garments in a sealed plastic bag to minimize bedbug attraction to worn clothing.

c. Careful examination of "used" items, such as items from garage sales or resale shops (especially bedding items), for bedbugs or bedbug faeces prior to bringing them inside the home.

8. TICKS

Ticks are small spiderlike animals (arachnids) that bite to fasten themselves onto the skin and feed on blood. Ticks live in the fur and feathers of many birds and animals. Tick bites occur most often during early spring to late summer and in areas where there are many wild animals and birds.

Ticks have multiple life stages that may bite people. The primary concern with tick bites is disease transmission, although tick paralysis may occur from an attached tick, and (rarely) allergic reactions to their bites may happen, and some tick bites appear to sensitize patients to allergens that can later cause food (specifically red meat) allergy.

8.1. Disease transmission

Ticks can transmit several infectious diseases:

8.1.1. Lyme borreliosis (ie, Lyme disease) is one of the most frequently reported tick-borne human diseases. It is caused by the spirochete Borrelia burgdorferi, which is transmitted by the bite of infected Ixodes ticks.

8.1.2. Rocky Mountain spotted fever (RMSF) is another illness transmitted by tick bite.

8.2. Clinical Manifestation

8.2.1. Unfortunately for the purpose of detection, the tick bite is usually painless and remains that way even after the tick stops the blood meal and falls off of the skin. However, the bite site may develop

a. Itching

b. Burning

c. red or brown spot

d. rarely, localized intense pain

8.3. Allergy

8.3.1. Bites of some ticks can cause rare systemic allergic reactions immediately after the bite itself, which have been reported with bites from the Ixodes tick.

8.3.2. The bites of other ticks have been implicated in sensitizing patients to a carbohydrate determinant, galactose-alpha-1,3-galactose (also called alpha-gal), which is also found in the drug cetuximab and some red meats, resulting in allergic reactions upon exposure to these substances instead of to the tick bites directly.

8.4. Management

When an attached tick is detected, the first step involves tick removal.

8.4.1. Tick removal — Using proper technique for tick removal is important. The use of forceps or protected fingers resulted in the satisfactory removal. The proper technique for removal of the attached tick includes the following steps:

a. If available, use tweezers or small forceps to grasp the tick as close to the skin surface as possible. In the absence of tweezers, use paper or cloth to protect the fingers during tick extraction.

b. Pull straight up gently but firmly, using steady pressure. Do not jerk or twist.

c. Do not squeeze, crush, or puncture the body of the tick, since its fluids may contain infectious agents.

d. Disinfect the skin thoroughly after removing the tick and wash hands with soap and water.

e. If sections of the mouthparts of the tick remain in the skin, they should be left alone as they will normally be expelled spontaneously.

f. After the tick removal and the skin cleansing, the person bitten (or the parents) should observe the area for the development of erythema migrans for up to 30 days following exposure. Components of tick saliva can cause transient erythema that should not be confused with erythema migrans.

g. Since the tick usually needs to be attached for two to three days before transmission of the Lyme disease agent occurs, removal of the tick within this time frame often prevents the infection.

8.4.2. Antimicrobial prophylaxis

a. Doxycycline has been demonstrated to be effective.

b. Doxycycline – 100 mg orally twice daily for adults for 10 days; 2.2 mg/kg twice daily (maximum 100 mg per dose) for children for 10 days (range of duration of treatment is 10 to 21 days).

8.5. Prevention

The only known form of prevention of tick bites is avoidance of the tick.

8.5.1. Wear protective clothing

8.5.2. Use repellents that contain DEET or permethrin

8.5.3. Avoid areas of high vegetation including tall grass and leaf litter

8.5.4. Bathe or shower within two hours of coming indoors to assist in washing off crawling ticks

8.5.5. Carefully examine gear and pets for ticks, and tumble-dry clothes in a dryer for one hour on high heat.

8.5.6. The only known prevention of anaphylaxis to red meat, as a result of sensitization through tick bite, is to avoid ingesting red meat

9. WASPS AND BEES

9.1. Clinical manifestation

9.1.1. Wasp bite

A wasp sting causes a sudden, sharp pain at first. A swollen red mark may then form on the skin, which can last a few hours and may be painful and itchy.

9.1.2. Bee bite

A bee sting feels similar to a wasp sting, but the sting will often be left in the wound. The sting can cause pain, redness and swelling for a few hours. As with wasp stings, some people may have a mild allergic reaction that lasts up to a week.

9.2. Management

9.2.1. Mild to moderate reactions

a. These can be treated at home

b. Wash the sting area with soap and water to remove as much of the venom as possible.

c. Apply a cold pack to the wound site to reduce swelling and pain.

d. Keep the wound clean and dry to prevent infection.

e. Cover with a bandage if desired.

f. Use hydrocortisone cream or calamine lotion if itching or skin irritation becomes bothersome. Baking soda and colloidal oatmeal are soothing to the skin and can be used during a bath or through medicated skin creams.

g. OTC pain relievers, such as ibuprofen, can manage pain associated with wasp stings.

h. Antihistamine drugs, including diphenhydramine and chlorpheniramine, can reduce itching as well.

i. Vinegar is another possible home remedy that may be used for wasp stings. (The theory is that the acidity of vinegar can help neutralize the alkalinity of wasp stings. The opposite is true of bee stings, which are more acidic). To use vinegar on wasp stings, soak a cotton ball with apple cider or white vinegar and place it on top of the affected area of skin. Use slight pressure to help with the pain and inflammation. The cotton ball can be kept on top of the skin for several minutes.

j. Home remedy for bee sting, a paste made of baking soda and water can help neutralize bee venom to reduce pain, itching, and swelling. Apply a thick layer of baking soda paste to the affected area. Cover the paste with a bandage. Leave on for at least 15 minutes and re-apply as needed

9.2.2. Severe reactions

a. Severe allergic reactions will require immediate referral to Emergency department.

10. RED BACK SPIDER (WIDOW SPIDERS)

Latrodectism is the medical term for the manifestations (both local and systemic) of bites by widow spiders.

10.1. Clinical manifestations

10.1.1. Patients typically have a recent (<8 hours) history of an at-risk activity, such as gardening, chopping wood, using outdoor furniture, or cleaning out a garage. Approximately 75% of bites are on the extremities, particularly the lower extremities

10.1.2. Most bites are either initially asymptomatic or cause mild pain at the bite site.

10.1.3. The time of onset of more generalized symptoms is approximately 30 to 120 minutes from the time of the bite but may be longer on occasion.

10.1.4. Muscle pain is the most prominent feature in systemic reactions and can affect the extremity muscles, abdomen, and back.

10.1.5. Severe abdominal pain with abdominal wall rigidity is characteristic. Abdominal pain from a widow bite has been mistaken for a variety of abdominal surgical emergencies, including appendicitis and acute cholecystitis.

10.1.6. The pain is self-limited and typically resolves within 24 to 72 hours.

10.1.7. Intermittent muscle rigidity and tenderness either adjacent to the bite wound or involving the abdomen, chest, or back is described in up to 60% of cases.

10.1.8. Muscle tenderness may be accompanied by weakness, tremor, and myoclonus.

10.1.9. Other symptoms may include tremor, weakness, shaking of the extremity, local paresthesias, headaches, nausea, and vomiting.

10.1.10. In infants and young children, latrodectism may present nonspecifically as a distressed and inconsolable child who is refusing food and drink and has generalized erythema.

10.1.11. The typical bite consists of a blanched circular patch with a surrounding red perimeter and a central punctum. This “target” lesion may be seen in up to 50% of cases. Some bites resemble a wheal and flare reaction. Local diaphoresis and lymphadenopathy may also be present.

10.1.12. Patients presenting more than 24 hours after latrodectism, irrespective of the bite location, can manifest burning pain in the soles of the feet, pain in the legs, below the knee, and profuse sweating below knees

10.2. Management

10.2.1. In suspected red back spider bite, it is advised not to move around much as this will increase the blood flow and spread the poison.

10.2.2. Strap the area and limb with a firm bandage

10.2.3. Call an ambulance as the patient need to be manage in the emergency department

10.2.4. Young children and pets are the most at risk.

11. FIRE ANTS

11.1. Clinical manifestations

Clinical reactions can range from mild discomfort to life-threatening anaphylaxis.

11.2. Bite reactions

11.2.1. Bite reactions are divided into three types: the wheal and flare reaction, the large local reaction and systemic allergic reactions.

11.2.2. Wheal and flare – Nearly all individuals develop hive-like lesions with surrounding erythema at the sting site. This reaction develops within 20 minutes and is accompanied by painful burning and then pruritus. Burning sensation is characteristic and helps differentiate the stings of

IFA from those of other insects. Symptoms are more pronounced during the summer months when the ants have more venom.

11.2.3. Large local reaction – In individuals with venom-specific immunoglobulin E (V-IgE), large local reactions may develop at the sting site over 6 to 24 hours, simultaneously with the development of the sterile pustule. The sterile pustule ultimately sits atop an area of intensely pruritic, painful inflammation. Although usually self-limited, swelling can be severe, and vascular compromise can occur in extremities.

11.2.4. Systemic allergic reactions — Systemic allergic reactions may range from cutaneous (generalized urticaria, angioedema, pruritus, erythema) to life-threatening bronchospasm, laryngeal edema, or vascular collapse. Anaphylaxis may occur within minutes or may rarely develop hours after a sting. A single sting is sufficient to cause anaphylaxis.

11.3. Management

11.3.1. Wheal and flare reactions

a. No specific treatment is required for wheal and flare reactions

b. Application of topical anti-itch preparations, such as hydrocortisone acetate (1%) cream or oral antihistamine treatment, provide comfort until the itching stops. Itching can last for many hours.

c. The lesions should be left intact as scratching can lead to infection.

d. Excoriated lesions should be kept clean with soap and water.

e. Infected lesions require appropriate antimicrobial therapy

11.3.2. Large local reactions

a. Pruritus can be treated with oral antihistamines and high potency topical corticosteroids - clobetasol 0.05% ointment. Topical corticosteroids are applied every four hours until the itching subsides.

b. In individuals with predictable large local reactions, immediate application of high potency topical corticosteroids and administration of a single dose of 20 mg of prednisone attenuates the response.

11.3.3. Systemic allergic reactions

a. Need immediate referral to emergency department through an ambulance

12. MANAGEMENT OF INSECT BITES

12.1. Refer to APPENDIX 1 for the Virtual Management of Insect Bites Algorithm

13. LABORATORY STUDIES

Laboratory studies are seldom necessary. Microscopic examination of skin scrapings can be useful in the diagnosis of scabies or mite infestations but are not useful for most insect bites and it will need face to face consultation.

14. RED FLAGS

14.1. Difficulty / noisy breathing

14.2. Swelling of lips, tongue, face, eyes

14.3. Swelling / tightness in throat

14.4. Wheeze or persistent cough

14.5. Difficulty talking and / or hoarse voice

14.6. Difficulty swallowing

14.7. Pain distal from bite / sting site

14.8. Vomiting

14.9. Abdominal pain

14.10. Generalized erythema or urticarial rash

14.11. Past history of severe allergic reaction or known allergy to an insect bite or sting

14.12. Signs of envenomation / neurotoxic paralysis (any of the following)

14.12.1. Drooping of eye lids (ptosis)

14.12.2. Decrease / paralysis of eye movements (ophthalmoplegia)

14.12.3. Limb weakness

14.12.4. Respiratory abnormalities

15. REFERRAL CRITERIA

15.1. Referral to ER

15.1.1. Difficulty / noisy breathing

15.1.2. Swelling of lips, tongue, face, eyes

15.1.3. Swelling / tightness in throat

15.1.4. Wheeze or persistent cough

15.1.5. Difficulty talking and / or hoarse voice

15.1.6. Difficulty swallowing

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c. Limb weakness

d. Respiratory abnormalities

15.2. Referral to Family Physician/ Specialist

15.2.1. Local reactions are not improving with medications

15.2.2. Worsening of skin reactions

15.2.3. Suspected insect hair embedded in skin

15.2.4. Not sure of the diagnosis

15.3. Summary of immediate home remedy for all insect bites

15.3.1. Wash the area with soap and cool water

15.3.2. Keep the area clean and try not to scratch it

15.3.3. Put a cold, damp washcloth on the area

15.3.4. Take or apply anti-itch medicine

15.3.5. Take OTC medicine for the pain

15.4. Summary of Prevention for all insect bites

15.4.1. Wear shoes, long-sleeved shirts, and long pants when outdoors

15.4.2. Use insect repellents

15.4.3. Stay inside at dawn and dusk, when mosquitoes are most active

15.4.4. Drain areas of standing water near home, such as wading pools and buckets

15.4.5. Keep foods and drinks covered

15.4.6. If a stinging insect is seen, stay calm and slowly back away

15.4.7. Avoid stepping on ant mounds

15.4.8. Call a pest-control service to get rid of insect nest safely, if it is spotted

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APPENDIX 1 – VIRTUAL MANAGEMENT OF INSECT BITES ALGORITHM