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NEGLECTED TROPICAL DISEASES AND OTHER PARASITIC DISEASES CLINICAL TREATMENT ALGORITHMS 2020

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NEGLECTED TROPICAL DISEASES AND OTHER PARASITIC DISEASES CLINICAL TREATMENT ALGORITHMS 2020

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FIG1. ASCARIASIS (ROUNDWORM): MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

Pulmonary and hypersensitivity manifestations:
Loeffler's syndrome (cough, sub sternal discomfort, low grade fever, crackles and wheezing, in the absence of consolidation) and/or Urticaria

AND/OR

Intestinal symptoms:
Abdominal discomfort, Anorexia, Nausea, vomiting, Diarrhea, Steatorrhea

AND/OR

Hepatobiliary and pancreatic symptoms:
Biliary colic, Bicalculous cholecystitis, Ascending cholangitis, Obstructive jaundice, Bile duct perforation with peritonitis, Biliary tree strictures, Hepatic abscesses

AND/OR

Intestinal obstruction
Malnutrition and growth retardation

YES

DIAGNOSIS

Worms macroscopic appearance

(At all levels of health facilities)

AND/OR

Stool microscopy: Eggs by direct or concentration technique (**At H.C and Hospital levels)**

AND/OR

FBC: Eosinophilia *(***At Hospital level)**

AND/OR

Serology: antibodies to *A. lumbricoides (***At Hospital level)**

AND/OR

Imaging:

1. Plain radiograph OR Barium swallow: intestinal obstruction
2. Ultrasonography: hepatobiliary or pancreatic ascariasis
3. CT or MRI: identify worm(s) in the liver or bile ducts.

*(***At Hospital level)**

TREATMENT

- **Albendazole**: 400mg PO once (children < 2 years old: 200 mg)

  OR
- **Mebendazole**: 100mg BID x 3 days or 500mg PO once

  OR
- **Ivermectin:** 150-200mcg/kg PO once

Endoscopy and surgery

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FIG 2. TRICHURIASIS (WHIPWORM): MANAGEMENT ALGORITHM

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CLINICAL PRESENTATIONS

- Asymptomatic
- Acute phase (abdominal pain, mucus/bloody stool

- **Advanced infection :** Malnutrition, anemia, rectal prolapse, growth retardation

DIAGNOSIS

- **Stool examination:** wet mount technique, concentration techniques to quantify eggs,
- Serology and PCR (when available)

TREATMENT

Drugs of choice :

- Albendazole + ivermectin: ALB* 400 mg + IVM 200mcg/kg/d for 3d

Alternative agents:

- Oxantel pamoate 15 to 30 mg/kg + ALB* 400 mg on 3 consecutive days
- ALB* 400 mg or mebendazole 500 mg single dose (low cure rate)

***ALB 200 mg for children < 2 years**

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FIG 3. HOOKWORM (ANCYLOSTOMIASIS): MANAGEMENT ALGORITHM

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CLINICAL PRESENTATIONS

- Dermal focal pruritic maculopapular eruption
- *Acute gastrointestinal symptoms*: Nausea, diarrhea, vomiting, abdominal pain
- *Chronic nutritional impairment (due to chronic anaemia)*

DIAGNOSIS

Stool examination seeking hookworm eggs

TREATMENT

Drug	Dosage	
	Adult	Children
Drugs of choice		
Albendazole	400 mg PO once	400 mg PO once Note : <2 years old 200 mg once
Alternative agents		
Mebendazole	100 mg BID x 3 days	100 mg BID x 3 days
Pyrantel pamoate	11 mg/kg per day for 3 days, not to exceed 1 g/day	11mg/kg once daily for 3 days; maximum: 1 g/dose

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FIG4. STRONGYLOIDIASIS: MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

Skin reactions:

In acute infection (Inflammation, Petechiae**,** Severe pruritus) **and/or In chronic infection (**pruritus commonly in the buttocks**,** Periumbilical purpura, angioedema, and erythroderma).

AND/OR

Gastrointestinal symptoms:

Upper abdominal pain, diarrhea, anorexia, nausea, and vomiting

AND/OR

Pulmonary manifestations:

Dry cough, Dyspnea, Wheezing, Hemoptysis, Loffler's-like syndrome with eosinophilia**, Asthma that worsens with corticosteroid use** and pulmonary embolism

AND/OR

Hyperinfection syndrome:

Dissemination of filariform larvae to the **lungs, liver, heart, central nervous system, and endocrine glands:**
Fever, other GI, Respiratory and dermatological manifestations.

DIAGNOSIS

Detection of larvae, in the stool the duodenojejunal fluid, sputum, bronchoalveolar lavage fluid, pleural fluid, peritoneal fluid and surgical drainage fluid and to the skin biopsy (**Hospital**)

AND/OR

Serology test by ELISA: IgG to filariform larvae (**Hospital**)

AND/OR

Chest radiography: Foci of hemorrhage, pneumonitis, and edema (**Hospital**)

MANAGEMENT

Albendazole:
400mg PO BID for 3-7 days (children < 2 years old: 200mg)

OR

Ivermectin: 150-200mcg/kg PO, either on 2 consecutive days or 2 weeks apart

NO

Disseminated

YES

5-7 days of ivermectin or combine ivermectin with albendazole until the patient responds.

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FIG 5. ENTEROBIASIS (PINWORM): MANAGEMENT ALGORITHM

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CLINICAL PRESENTATION

Asymptomatic /Mostly perianal itching

DIAGNOSIS

Laboratory: Stool examination, (sampling using **TAPE TEST** technique)

TREATMENT

	Dosage	
	Adult	**Children**
Drugs of choice		
Albendazole	400mg PO once repeat in 2 weeks	400mg PO once repeat in 2 weeks. Notes: < 2 year old, 200mg once repeat in 2 weeks.
Alternative agents		
Mebendazole	100mg PO once repeat in 2 weeks	100mg PO once repeat in 2 weeks
Pyrantel pamoate	11 mg/kg per day, not to exceed 1 g	11 mg/kg per day, not to exceed 1 g

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FIG 6. SCHISTOSOMIASIS (BILHARZIA): MANAGEMENT ALGORITHM

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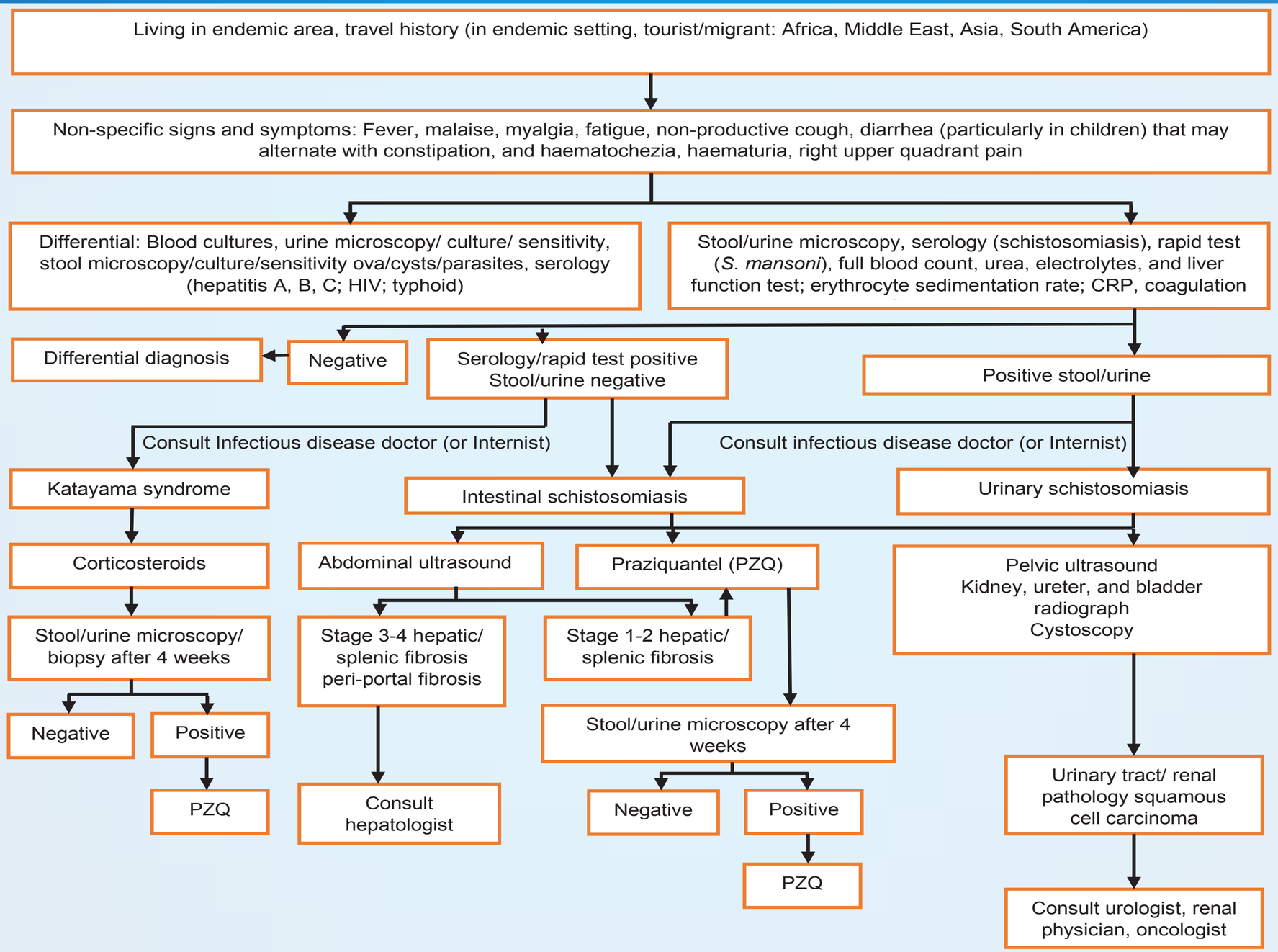

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TABLE 1. KEY INDICATORS FOR POSITIVE DIAGNOSIS OF SCHISTOSOMIASIS

INVESTIGATIONS	INDICATORS FOR POSITIVE DIAGNOSIS
Medical history	• Have you travelled to or emigrated from an endemic country recently? If so from where? • Have you been in contact with a freshwater source (such as lakes, rivers, or streams)? (Patients returning/emigrating from Africa or the Middle East may have either intestinal or urinary schistosomiasis and those from Asia or South America may have intestinal schistosomiasis)
Physical examination	• An urticarial rash (maculopapular lesions) may be present where the cercariae penetrated the skin (discrete erythematous raised lesions that vary in size from 1-3 cm) • On palpation of the abdomen, hepatomegaly (tender left lobe) and in about a third of patients' splenomegaly may be detected • Auscultation of the lungs frequently detects dry or moist rales during the acute phase • Generalized lymphadenopathy may be present
Laboratory	• Stool/urine examination for schistosome eggs • Full blood count: eosinophilia (>80% of patients) with acute infections; anaemia and thrombocytopenia may be present in chronic and advanced schistosomiasis • Coagulation profile: prolonged prothrombin time, indicated by an increased international normalised ratio, may be evident in chronic and advanced cases • Urea, electrolytes, and liver function: raised urea and creatinine may be evident; and hyperglobulinaemia and hypoalbuminaemia may be present in chronic and advanced schistosomiasis • Serology: may be diagnostic in patients in whom no eggs are present, such as those with Katayama syndrome • A Point-Of-Care Circulating Cathodic Antigen (POC-CCA or CCA) urine-based rapid test is highly sensitive for schistosomiasis *mansoni* and commercially available. May be used in patients with stool egg negative. • Rectal or bladder biopsy for the identification of eggs may be performed if stool or urine are egg-negative but schistosomiasis is still suspected
Radiology	• Chest radiograph: pulmonary infiltrates are common in acute cases (Katayama syndrome) • Abdominal ultrasound: can establish extent of liver and spleen pathology in intestinal schistosomiasis • Pelvic ultrasound: can establish extent of bladder, ureteral, and renal pathology in urinary schistosomiasis

TABLE 2. ASSESSMENT OF INTESTINAL SCHISTOSOMIASIS: DIAGNOSIS, DISEASE STAGING WITH MORBIDITY MARKERS, AND FOLLOW-UP POST-TREATMENT

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ASSESSMENT		COMMUNITY SETTINGS (ENDEMIC AREAS)	INSTITUTIONAL SETTINGS
Diagnosis	Traditional	Parasitological methods	Parasitological methods Biopsy/tissue Serology
	New Tools	Immunodiagnosis DNA detection Rapid tests (CCA)	Immunodiagnosis DNA detection Rapid test (CCA)
Morbidity markers	Traditional	Ultrasonography Fecal occult blood	Doppler imaging Endoscopy Colonoscopy Fecal occult blood
	New Tools		Computed tomography Magnetic resonance Liver elastography (indicated in individuals who are not egg excretors before treatment)
Follow-up post-treatment	Traditional	Parasitological methods Ultrasonography	Parasitological methods Ultrasononography Doppler imaging Endoscopy Colonoscopy (4 methods are indicated in individuals with hepatic schistosomiasis)
	New tools	DNA detection Rapid tests (CCA)	DNA detection Rapid tests (CCA) Liver elastography

NOTE: Schistosomiasis has a broad spectrum of clinical presentations, and up to 10% of patients may have severe hepatosplenic presentation. Although severe forms of disease are expected to correlate with high intensity of infection, which are commonly seen in areas of high and moderate endemicity, individuals living in low endemic and non-endemic areas may also present with advanced liver disease, even without egg excretion.

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FIG 7. TAENIASIS (T. SOLIUM): MANAGEMENT ALGORITHM

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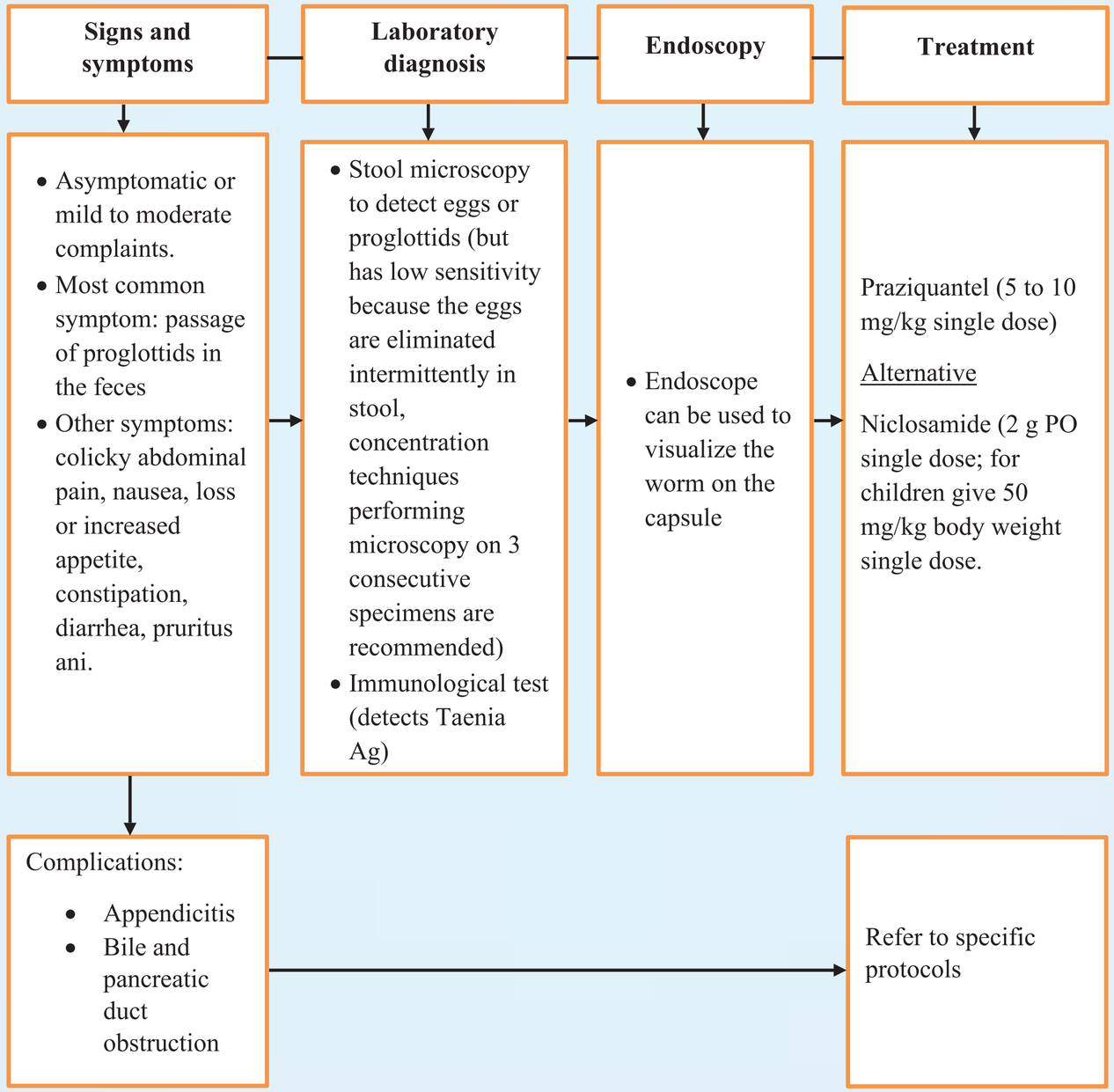

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FIG 8. CYSTICERCOSIS: MANAGEMENT ALGORITHM

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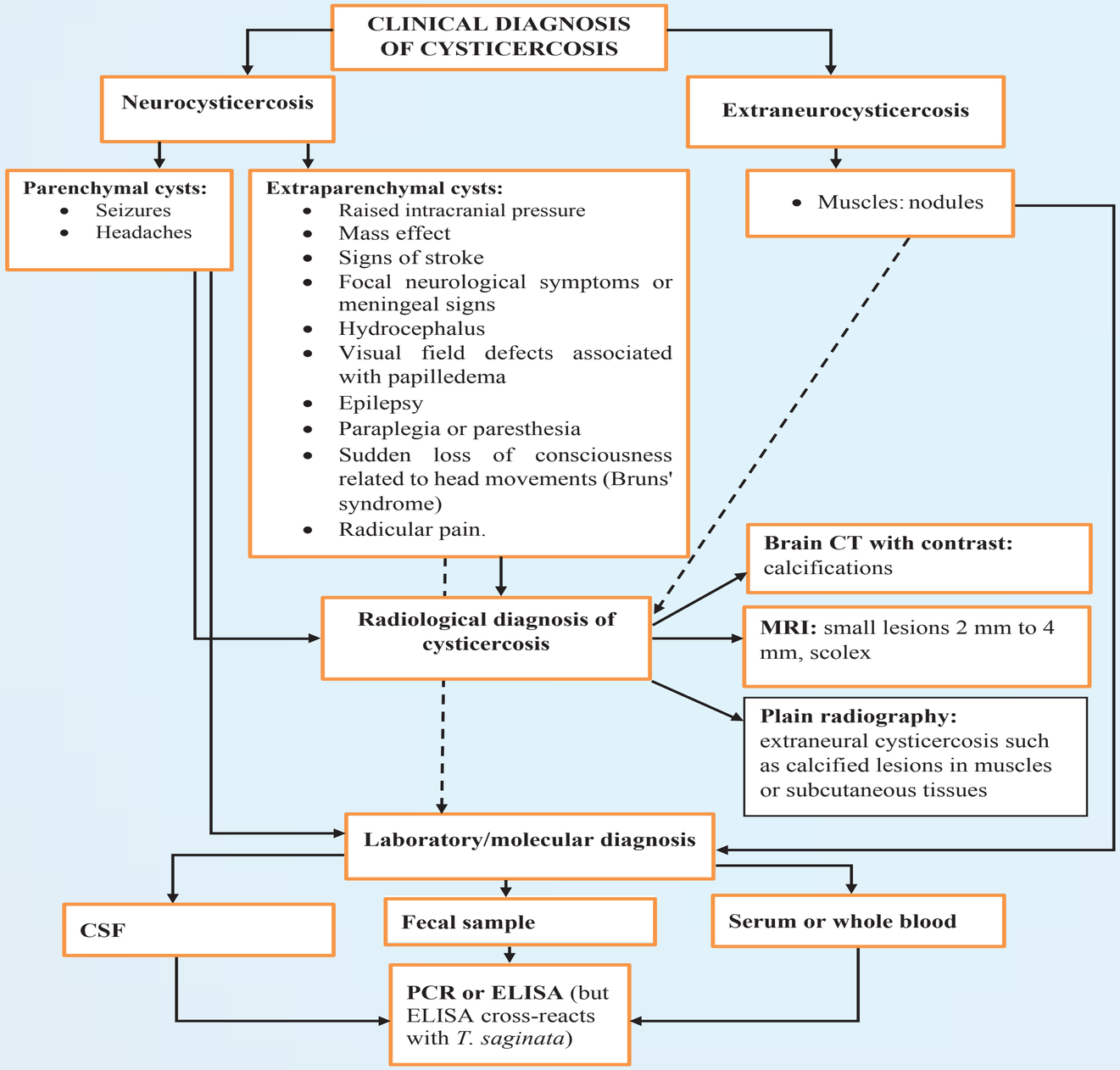

NOTE:

- Fundoscopic exam is indicated for direct visualization of the parasite which is pathognomonic for diagnosis of cysticercosis
- Ultrasonography of the glob help to reveal a well-defined cystic lesion with hyper-reflective scolex suggestive of intravitreal cysticercosis.

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TABLE 3. TREATMENT OF CYSTICERCOSIS

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Seizures	**Phenytoin, carbamazepine, phenobarbital, etc.**
Intracranial pressure (ICP)	Prednisolone is given at 1 mg/kg /day for 5 to 10 days followed by rapid dose tapering if given for more than 7 days.
Antiparasitic	1) Albendanzole 15 mg/kg/day (800mg/day divided in 2 doses) + Praziquantel 50 to 100 mg/kg divided into 3 doses/day 2) Albendazole OR Praziquantel alone

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FIG 9. HYMENOLEPIASIS: MANAGEMENT ALGORITHM

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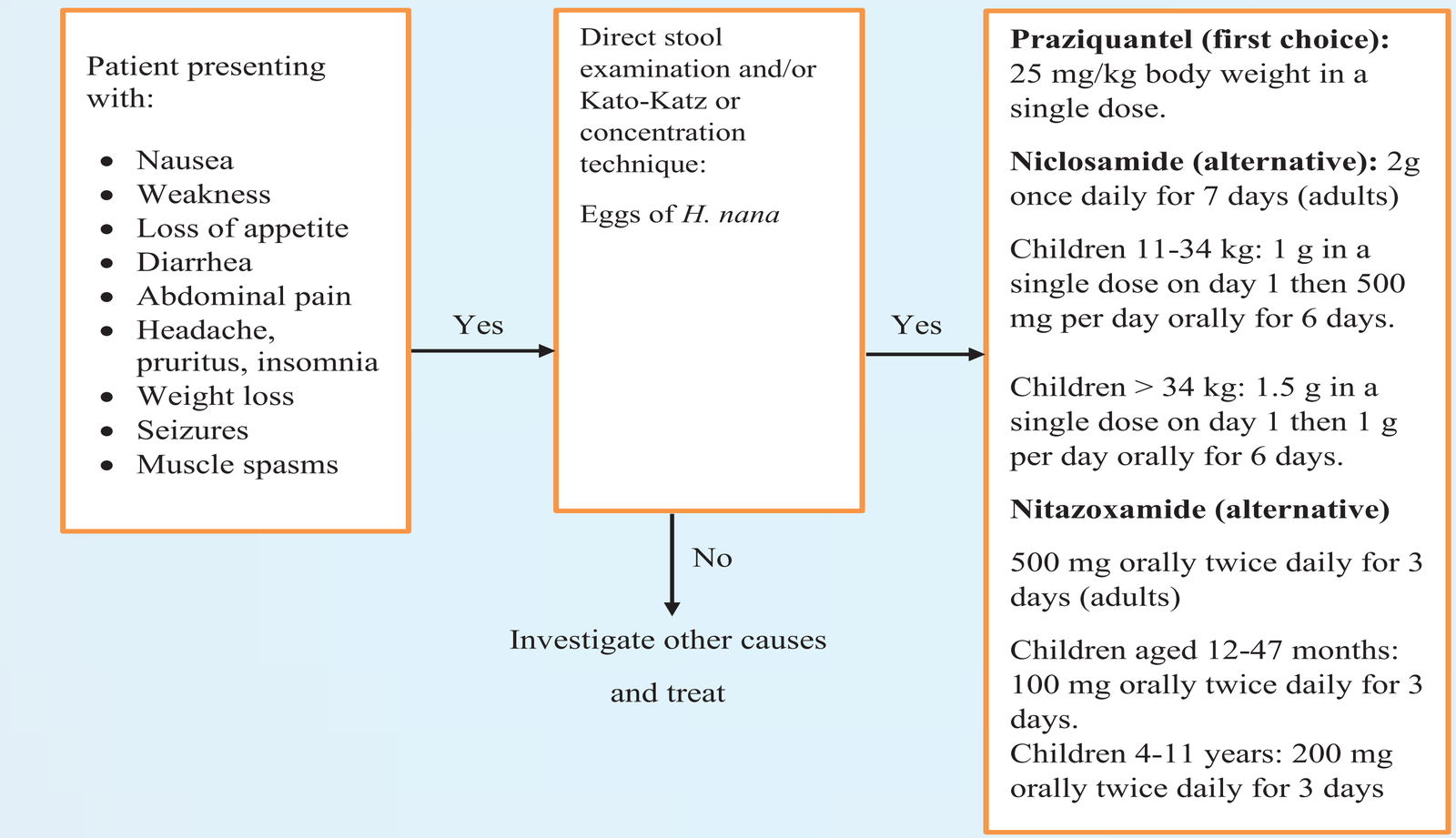

NOTE: Nitazoxamide and Praziquantel are contraindicated in patients with known hypersensitivity to the drugs.

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FIG 10. LYMPHATIC FILARIASIS (LF): MANAGEMENT ALGORITHM

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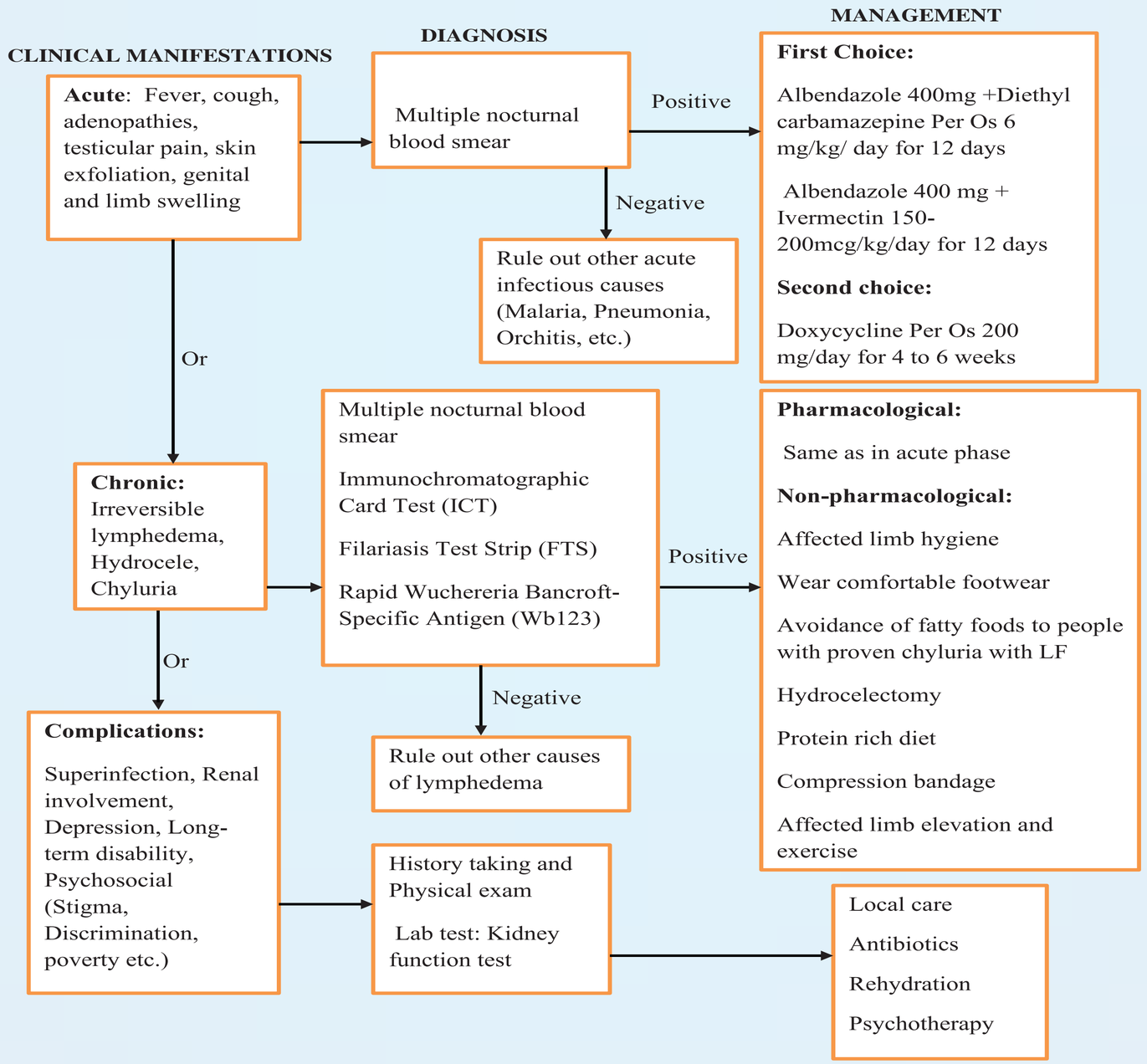

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FIG 11. TRACHOMA: MANAGEMENT ALGORITHM

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CLINICAL PRESENTTIONS

Active trachoma:

- Follicles on upper tarsal conjunctiva
- Follicular conjunctivitis
- Mucopurulent discharge

Cicatricial disease:

- Entropion (inward rolling of the eyelid)
- Trichiasis (ingrown eyelashes)
- Corneal opacities

DIAGNOSIS

In endemic areas: Clinical manifestations of the infection

Research & low prevalence:

- Immunofluorescent cytology, PCR
- Giemsa cytology and culture

TREATMENT

Antibiotic therapy :

- Tetracycline ointment 1%, 2x/d/6weeks
  or
- Azithromycin 20mg/kg /single dose or azithromycin 1.5% 2 x/d/ 3 d ointment

- Surgery

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FIG 12. PODOCONIOSIS: MANAGEMENT ALGORITHM

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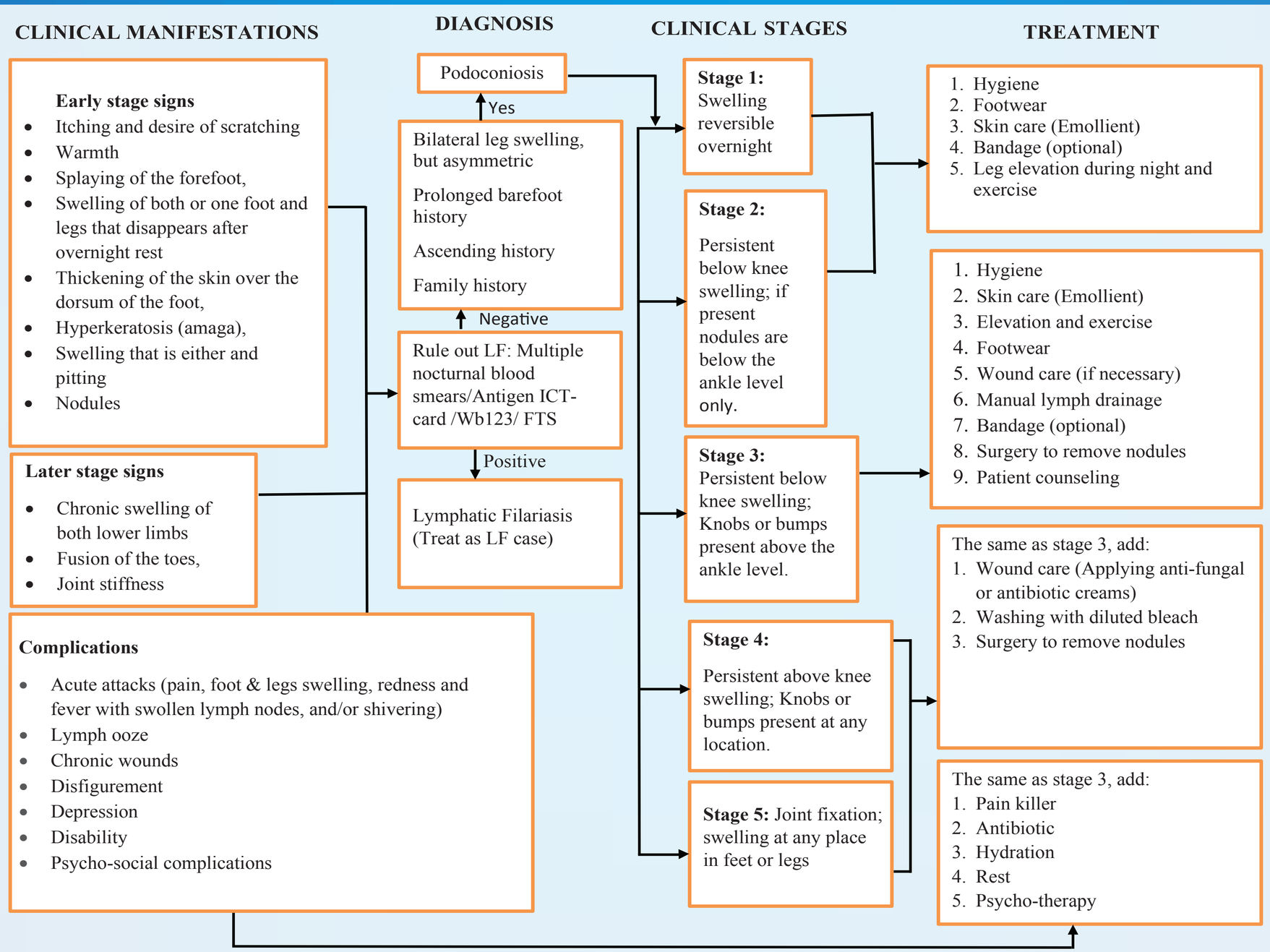

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FIG 13. SCABIES: MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

Symptoms:

- Itching ++++++
- Worse when warm, particularly at night
- May interfere with sleep
- Family history of itching

Signs:

- Burrows with a black dot at its head
- Distribution palmar sides of fingers, wrists, palms and soles(special in babies babies)
- Small red papule on trunk& between fingers
- Papules or nodules on penis scrotum, groin, hips, axillae, elbows, areola (mammae)
- Pathognomonic sign burrows

DIAGNOSIS

Clinical signs:

- History and typical clinical features
- The black dot at end of burrow
- Identification of mite on dermatoscope

(At hospital level)

- FBC: Eosinophilia

(At the referral hospitals)

- Skin pathology:
  Scabies mites on microscopy
  Eggs of the mite on microcopy
  Deep and superficial lymphoeosinophilic infiltrate

TREATMENT

Drug of choice:

- Ivermectin (200µg/kg) orally (taken with food) on day 1, 2, 8, 9, and 15.

Alternatives:

- Permethrin cream 5% Apply from chin to toes and under fingernails and toenails; Rinse off in shower 12 h later; repeat in 1 week
- Pediatric: >2 months: Apply as in adults but include head and neck in children <5 year; repeat in 1 week
- Benzoate Benzyl 25% on D1, D2, D3 overnight consecutive days to repeat 7 days later D8, D9, D10 (for persons above 12 years)

  Children 2-12 years: 1 part of 25% lotion +1 part of water.

  For children less 2 years: one part of 25% lotion + 3 parts of water.
- Treatment of contact persons
- Claritin 10 mg OD for 15 days

  Or
- Promethazine 25 mg NOCTE for 15 days ***&***
- Topical steroid to be applied onto the infected area: propionate clobetasol (Dermovate) cream or betamethasone dipropionate (Diprosone, Diprolene cream / ointment) OD for 15 days
- ATB if SUPERINFECTION

Table 1: BBE 25% Dilution table

	Children < 2 years	**Children 2-12 years**	**Children > 12 years and adults**
Dilution	Lotion must be diluted before use:		Use undiluted lotion 25%
	1 part 25% lotion + 3 parts water	1 part 25% lotion + 1 part water	
Contact time	12 hours (6 hours for infants < 6 months), then rinse off	24 hours, then rinse off	24 hours, then rinse off

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FIG 14. MYCETOMA: MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

- Painless mass & sinuses on foot or hands and any other body site
- Start as papular then with time grow into nodular or tumor with oozing and or ulcerated

and/or

- Discharge white or black grain

and/or

- Painful when superinfected or bone is affected.

DIAGNOSIS

At all levels of health facilities

- Painless papular /nodular /tumor sinuses
- Ulcerated lesion with oozing and or discharging white or black grain

At the hospital level

Laboratory:

Skin biopsy/FNA: with granulomatous inflammatory reaction with abscess containing grain

Direct microscopy and gram staining

Culture of grain using sabouraud or blood agar allow species identification

Imaging:

1. X-ray and ultrasonography allow to assess the disease extent and bony involvement.
2. The use of helical computer tomography have shown more detailed assessment of soft tissue and visceral organ involvement.

TREATMENT

At hospital level

The treatment must combine both antiactinomycetoma and antieumycetoma

Actinomycetoma treatment:

Parenteral Amykacin 15mg /kg OD 3-4 weeks cycle +oral TMP/SMX 800/160mg OD (95% cure rate within 1-3 cycles) **Or**

TMP/SMX 800/160mg OD for 1 year (cure rate of 60-90%)

In case of resistance

- Streptomycin sulphate (14 mg/kg daily) combined with Co-Trimoxazole (14 mg/kg twice daily)
- Streptomycin sulphate (14 mg/kg daily) combined with Rifampicin (15-20 mg/kg daily).

Eumycetoma treatment:

Itraconazole 400mg OD for 1-2 years & surgery

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TABLE 4. RISK OF RABIES VIRUS INFECTION: DEFINITION OF EXPOSURE CATEGORIES (WHO)

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RISK OF RABIES VIRUS INFECTION: DEFINITION OF EXPOSURE CATEGORIES (WHO)

Category of exposure	Description	PEP
Category I	• Contact with animal, or licks intact skin	• **No exposure**, therefore no PEP required
Category II	• Nibbles on exposed skin • Minor bite(s) or scratch(es) without bleeding	• **Minor exposure**, vaccine should be injected as soon as possible
Category III	• Transdermal bite(s) or scratch(es) • Licks on broken skin • Contamination of mucous membranes by anima's saliva (licks) • Exposed to bat	• **Severe exposure,** vaccine and rabies IG should be administered at distant sites as soon as possible. • IG can be administered up to 7 days after the injection of the first dose of vaccine

TOP 10 GENERAL CONSIDERATIONS IN RABIES PEP (WHO)

1. Wounds must be immediately washed/flushed for 15min and disinfected
2. Rabies PEP should be instituted immediately. PEP consists of a course of potent, effective rabies vaccine that meets WHO recommendations and administration of **rabies immunoglobulin (RIG)**
3. PEP must be applied using vaccine regimens and administration routes that have been proven to be safe and effective
4. PEP does not have contraindications if purified rabies IG and vaccine are used. Pregnancy and infancy are not contraindications to PEP
5. **If RIG is not available on first visit, use can be delayed by up to 7 days from the date of first vaccine dose**
6. Initiation of PEP should not await the results of laboratory diagnosis or be delayed by dog observation when rabies is suspected
7. When suspect rabid animal contacts (excluding bats) occur in areas free of carnivore-mediated rabies and where there is adequate surveillance in place, PEP may not be required. The decision must be based on expert risk assessment
8. **Patient presenting for rabies PEP even months after having been bitten should be treated as if the contact had recently occurred**
9. PEP should be administered even if the suspect animal is not available for testing or observation. However, vaccine or RIG administration may be discontinued if the animal involved: is a vaccinated dog (or ferret) that following observation for 10 days, remains healthy or is humanely killed and declared negative for rabies by a WHO prescribed laboratory test
10. In areas enzootic for (canine and wildlife) rabies, PEP should be instituted immediately unless adequate laboratory surveillance and data indicates that the species involved is not a vector of rabies.

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FIG 15. HUMAN RABIES - POST-EXPOSURE PROPHYLAXIS (PEP): MANAGEMENT ALGORITHM

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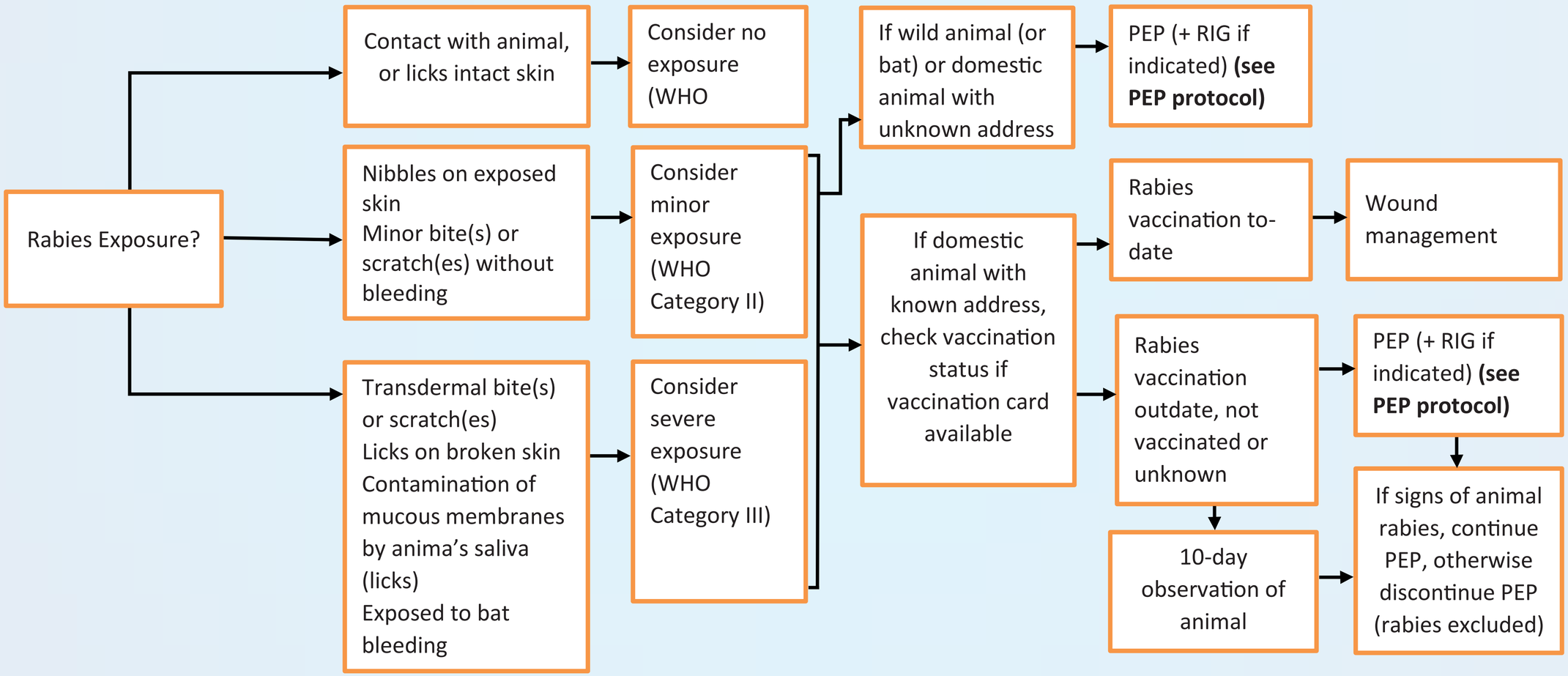

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TABLE 5. POST-EXPOSURE PROPHYLAXIS (PEP) FOR CATEGORIES II AND III EXPOSURE

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	No pre-exposure vaccination Or unknown vaccination status Or incomplete pre-exposure vaccination Or complete pre-exposure vaccination with a nerve tissue vaccine (NTV)		Complete pre-exposure vaccination with cell culture vaccine (CCV)
	Intramuscular (IM) **1-1-1-1-1** • Administer in the deltoid muscle (anterolateral thigh muscle in children <2years), never in the gluteal muscle • One IM dose = 0.5 or 1ml (depending on manufacturer)	**Intradermal (ID)*** **2-2-2-0-2** • Use Vero Cells (PVRV) or Chick Embryo cells (PCECV) Vaccine • The 2-site intradermal method is given as administering one dose of vaccine of 0.1ml ID at 2 different lymphatic drainage sites. • Usually administered in the deltoid muscle on the left and right upper arm and suprascapular area	**IM or ID*** • One IM dose =0.5 or 1ml (depending on the manufacturer) • One ID dose = 0.1ml
D0	1 dose (in the arm or thigh)	2 doses (1 dose in each arm)	1 dose
D3	1 dose (in the arm or thigh)	2 doses (1 dose in each arm)	1 dose
D7	1 dose (in the arm or thigh)	2 doses (1 dose in each arm)	-
D14	1 dose (in the arm or thigh)	-	-
D28	1 dose (in the arm or thigh)	2 doses (1 dose in each arm)	-
	+ Rabies immune globulin (RIG) on D0, if indicated (20 IU/Kg for children and adults)		No RIG

* Incorrect ID technique results in failure of PEP. If correct ID cannot be assured, use the IM regimen.

NOTE:

- Given the variable duration of incubation, administration of vaccine/ immune globulin is an urgent priority, even for patients exposed several months previously.
- RIG is indicated for category III exposed (unless it can be established that the patient has been correctly vaccinated against rabies before exposure – complete pre-exposure vaccination with 3 doses of a CCV); RIG can be administered up to 7 days after injection of the first dose of vaccine.
- Post exposure prophylaxis should begin as soon as possible; few days for maximum efficacy but ideally with 24 hours.
- Antibiotic therapy or prophylaxis is indicated for infected wounds or deep puncture wounds
- Tetanus vaccination status to be checked; if unknown or outdate the required.
- Wound care is important because it can reduce up to 90% the likelihood of rabies infection. The bite wound is washed with clean water and soap for 15 minutes or with povidone iodine.
- Postpone suturing if possible; if suturing is necessary ensure that RIG has been applied locally

TABLE 6. PRE-EXPOSURE RABIES PROPHYLAXIS (PREP)

	IM	ID	
D0	One dose is given in the deltoid area of the arm for adult and anterolateral area of the thigh for children < 2 years	One dose	Dose IM: 1ml or 0.5ml depending on vaccine type Dose ID: 0.1ml
D3	-	-	
D7	One dose at the site as above	One dose	
D14	-	-	
D21	One dose (or D28) at the site as above	One dose (or D28)	
D28	-	-	

NOTE: PrEP is recommended for anyone who is in continual, frequent or increased risk for exposure to the rabies virus, as a result of their occupation or residence.

TREATMENT OF RABIES

- There is no specific treatment
- Case management includes
  - Isolation in a quiet room protected as far as possible from external stimuli to prevent spasms and convulsions
  - Relieve anxiety and pain by use of sedatives
    - Morphine 30-54mg
  - If spastic muscle contractions use drugs with curare like action
  - Ensure hydration and diuresis
  - Intensive therapy in the form of respiratory and cardiac support
  - Patients with rabies are highly infectious, the virus is present in all secretions like saliva, tears, vomits, urine, and other body fluids
  - Nursing personnel should be warned of risks and protect themselves with PPE
  - Persons with open wounds and cut should not attend patients
  - In areas where rabies cases are encountered frequently PrEP (2-3 doses) is recommended.

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FIG 16. CONFIRMED OR SUSPECTED HUMAN RABIES: MANAGEMENT ALGORITHM

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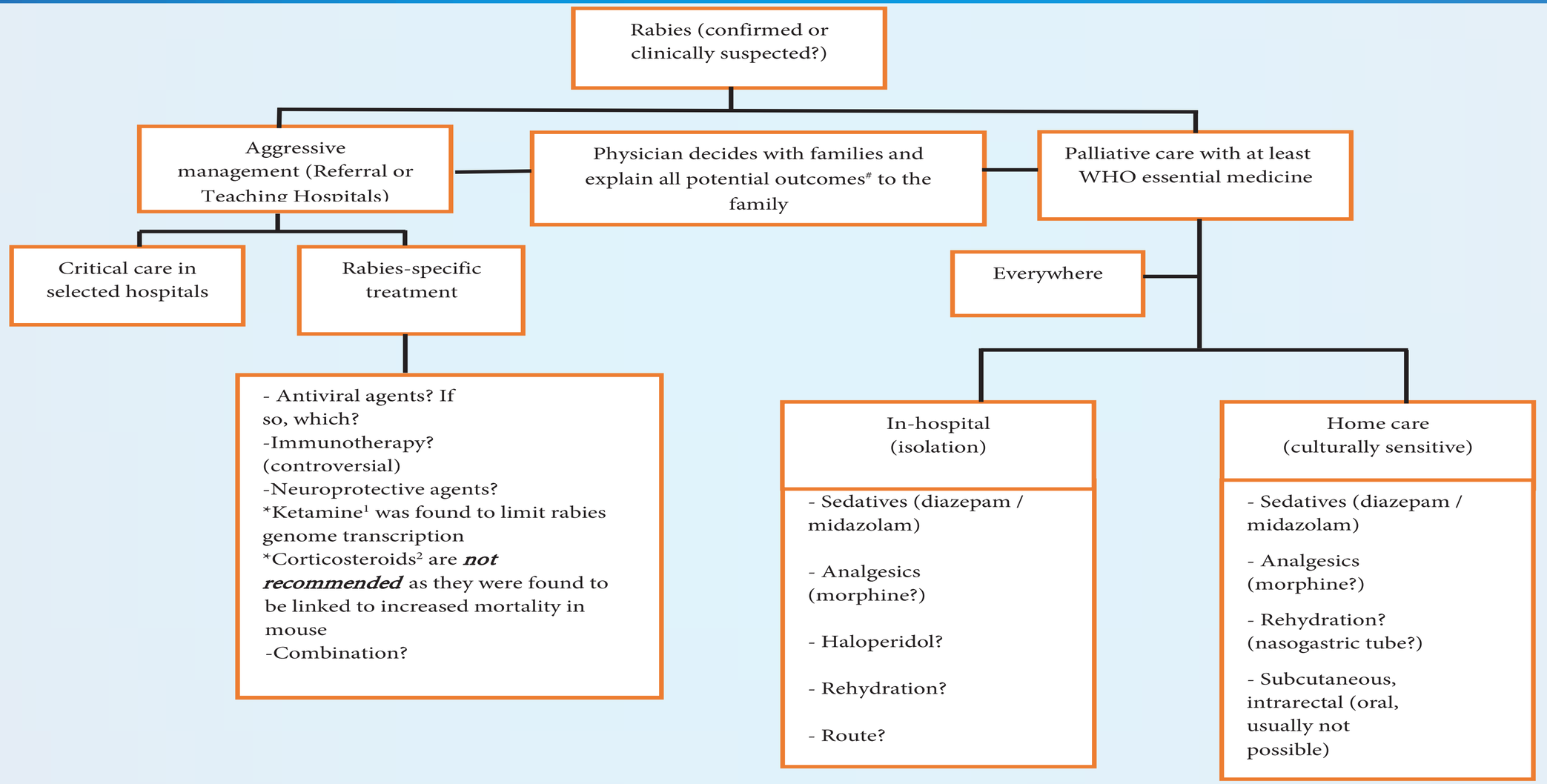

#Note: Currently, there is no effective curative treatment for rabies once clinical signs have appeared. Almost all patients with rabies will die.
-Very rare survivors have been documented. Except one, other survivors received one or more doses of rabies vaccine before the onset of clinical rabies.

[1]In a study, Ketamine has been demonstrated to inhibit the in vitro replication of rabies virus by inhibiting rabies virus genome transcription (Jackson AC et al., 2012)
[2]Corticosteroids: In mouse models, administration of corticosteroids increased the mortality rate and shortened the incubation period. They may effectively close the blood-brain barrier and reduce the entry of other therapeutic agents

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FIG 17. SNAKEBITE ENVENOMING (SBE): MANAGEMENT ALGORITHM

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Venom type	Snake species	Dominant clinical presentation of victim	First aid (community and HC), then transfer to hospital	Hospitali-sation	Supportive treatment	Antivenom type may be necessary for the threat to limb or life	Antivenom type	Suggested dose by intravenous injection
Cytotoxic	Puff adder (Impiri), Black Necked Spitting Cobra (Inshira Rukara), Rhombic Night Adder (Imfuha)	Painful progressive swelling (PPS) Bleeding may occur in puff adder bites (thrombocy-topenia):	Do not apply a tourniquet!	**Take the patient to hospital**	Intravenous fluids; Keep the bitten area lower than the heart † Analgesia	Puff adder, spitting cobras	Polyvalent	50ml: puff adder and spitting cobras
Neurotoxic	Black Mamba (Insana), non-spitting cobras (Forest cobra= Inshira Ikirezi)	Progressive weakness (PW), PPS occurs in non-spitting cobra bites	Non-spitting cobras: pressure immobilisa-tion or arterial tourniquet.	**Take the patient to hospital**	Protect the airway. Oxygen by mask or ventilation	All species	Polyvalent	80 ml (40 – 200 ml) Small doses may lead to a recurrence of symptoms
Haemo-toxic	Boomslang (Imfundura)	Bleeding	No specific first aid measures	**Take the patient to hospital**	Blood or blood component therapy ‡	Boomslang	Boomslang mono-specific	10 – 20 ml

‡ Heparin, antifibrinolytics and thrombolytics are of no value and may be dangerous.
§ Polyvalent antivenom for the triad of perioral paraesthesia, excessive salivation and sweating or metallic taste, within a few minutes of the bite (mambas) OR difficulty in breathing.
Polyvalent antivenom is effective against the bites of the mambas, cobras, rinkhals, puff adder and Gaboon adder only.
A test dose of antivenom is not indicated.

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FIG 18. PAINFUL PROGRESSIVE SWELLING (PPS): MANAGEMENT ALGORITHM

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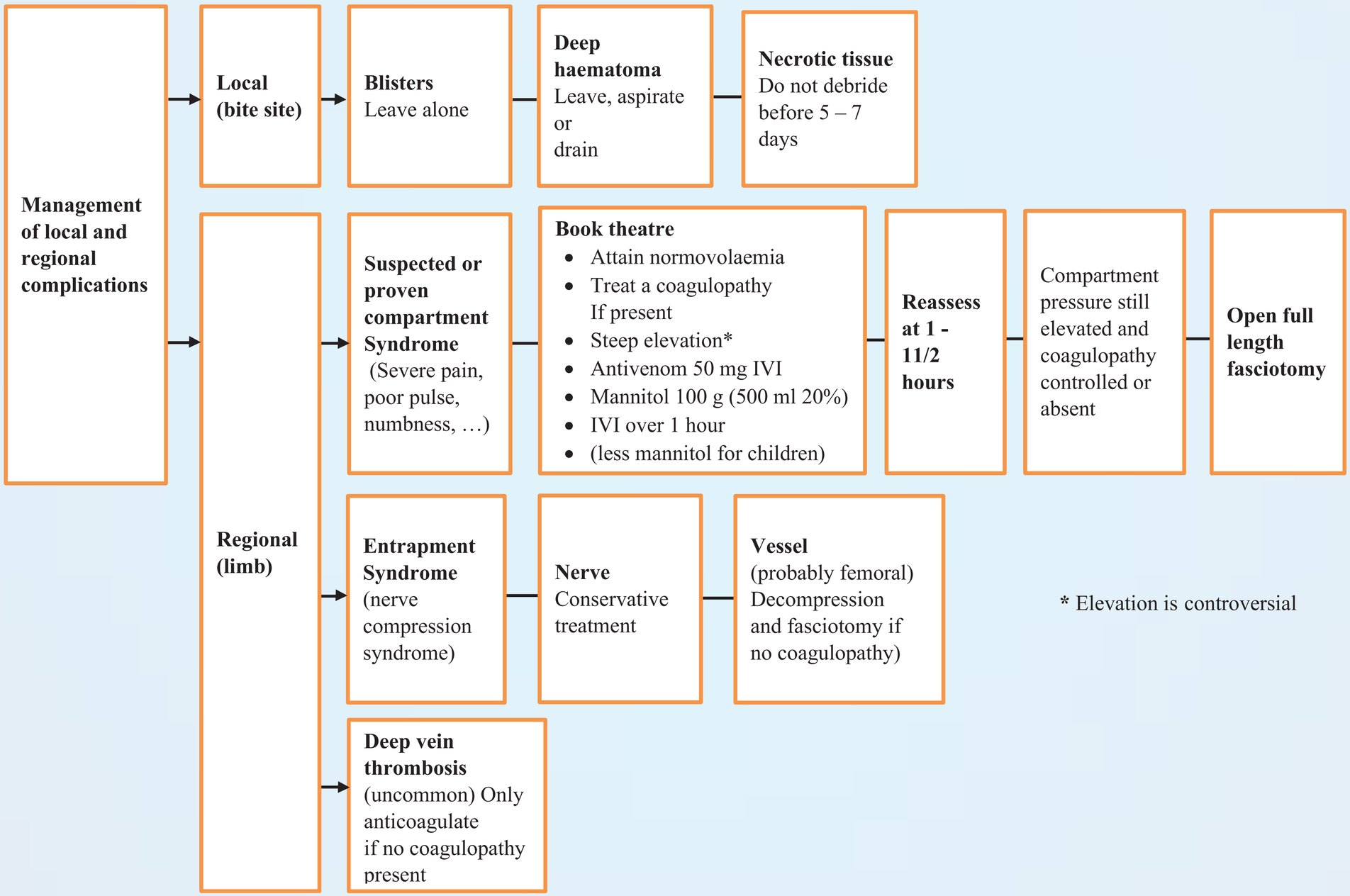

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FIG 19. AMEBIASIS: MANAGEMENT ALGORITHM

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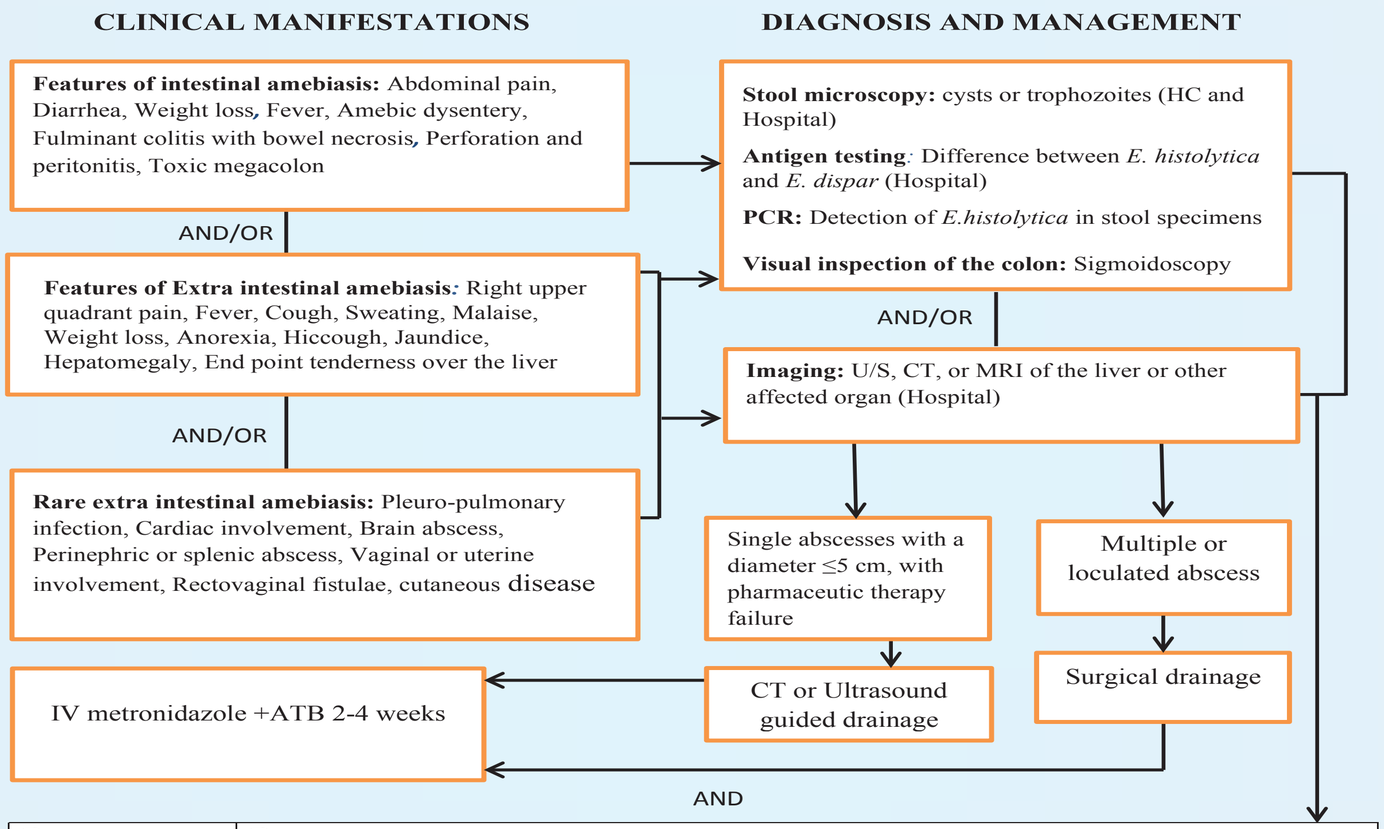

Drug	Dosage	
	Adult	**Children**
Tissue agents:		
Drugs of choice		
Tinidazole	2 g PO daily for 3-5 days	>3 years: 50 mg/kg/day, 3-5 days (max dose: 2 g/day
Alternative agents		
Metronidazole	500 to 750 mg PO TID , 7 to 10 D	35 to 50 mg/kg per day TID for 7 to 10
Nitazoxanide	500 mg BID, 3-7 D	1-3 years: 100 mg every 12 hours for 3 -7days
		4-11 years: 200 mg every 12 hours for 3-7 days
		≥12 years and Adults: 500 mg BID for 3 days
Luminal agents: (Paromomycin, (25-30 mg/kg per day PO, TID for seven days) to eliminate intraluminal cysts		

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FIG 20. GIARDIASIS: MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

Acute giardiasis:
Diarrhea (sudden in onset; initially may be watery), malaise, foul-smelling and fatty stools (steatorrhea), abdominal cramps and bloating, flatulence, nausea, weight loss, vomiting, fever

AND/OR

Chronic giardiasis:
Loose stools but usually not diarrhea, steatorrhea, profound weight loss (10 to 20 percent of body weight), malabsorption, malaise, fatigue, depression, abdominal cramping, borborygmi, flatulence, burping

DIAGNOSIS AND MANAGEMENT

Stool microscopy: Watery stool more likely to be positive for trophozoites; semi formed stool more likely to be positive for cysts (**HC and hospital levels**)

AND/OR

Immunoassays: against cyst or trophozoite antigens using ELISA (**Hospital level)**

AND/OR

Duodenal biopsy: Subtotal villous atrophy may be observed (**Hospital level)**

Drug	Dosage	
	Adult	**Children**
Drugs of choice		
Tinidazole	2 grams orally, single dose	50 mg/kg orally, single dose (maximum dose 2 grams)
Alternative agents		
Metronidazole	250 mg orally 3 times per day for 5 to 7 days	5 mg/kg orally three times per day for 7 days (maximum 250 mg per dose)
Albendazole	400 mg orally once daily for 5 days	15 mg/kg orally once daily for 5 days (maximum 400 mg per dose)
Mebendazole	200 mg orally 3 times per day for 5 days	200 mg orally 3 times per day for 5 days
Paromomycin	10 mg/kg orally 3 times per day for 5 to 10 days	10 mg/kg orally 3 times per day for 5 to 10 days

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FIG 21. TUNGIASIS (JIGGER DISEASE): MANAGEMENT ALGORITHM

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CLINICAL MANIFESTATIONS

Early and simplest stage for tungiasis:

1. Irritation and itching of the affected area (toes, heels, soles, hands, elbows, neck, buttocks and genital region)

2.Severe inflammation
3. Ulceration

Advanced stage

1.Hardening of the skin,
2. Erythematous papules
3.Painful, pruritic nodules
4.Crateriform lesions
5.Secondary infections
6.Lymphangitis and septicemia

Complications of tungiasis

If ignored, could lead to

- Super infection (bacterial and fungal)
- Gangrene
- Loss of a toe
- Abscess (when the egg sac is removed with a dirty pin or needle).
- Tetanus

DIAGNOSIS

Macroscopic inspection of the lesion (frequently, a few eggs stick to the skin near the lesion, a finding that is pathognomonic for the infection).

MANAGEMENT

FIRST CHOICE: CONSERVATIVE TREATMENT WITH DIMETICONE WITH LOW VISCOSITY (NYDA)*

- Wash the affected area with clean water and soap, then dry the area with clean towel or by sun.
- Then apply the topical Dimeticone from toes up to the ankle (s) 3 times within 10 minutes in a period of 7 days (3x in 10 minutes for 7 days)

ALTERNATIVE TREATMENT (at health facility)

- Disinfect with Chloramin or Chlorexidin or Potassium permanganate (KMnO4) the affected part of the body
- Extraction of fleas using sterilized kits.
- Cover remaining crater with a topical antibiotic (e.g. Fucidic acid cream, 3-4 times a day for 7 days)
- Pain killers (paracetamol or NSAIDs)
- Antibiotics (e.g. Cloxacillin 500mg P.O., 3 times a day for 7 days).
- If a gangrene and/or abscess refer to general surgery
- Check if Tetanus prophylaxis is up-to-date (less than 10 years) and if not, do administer SAT & VAT.

* The treatment can be performed by the patient himself

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FIG 22. MDA MEDICINES: MANAGEMENT OF SIDE EFFECTS

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MEBENDAZOLE, ALBENDAZOLE, IVERMECTIN AND PRAZIQUANTEL

SIDE EFFECTS (OCCURRED IN 0-72 HOURS)	**Mild:** • Vomiting • Headache • Dizziness • Joint and muscle pain • Stomach pain • Loss of appetite • Weakness	**Severe:** • Fever • Bloody diarrhea • Irregular and slow heart beat • Seizure • Increased ICP • Meningeal signs • Acute liver failure • Aplastic anemia • Hematuria • Toxic epidermal necrosis	**Allergic** • Minor wheals (Gupfuruta) • Skin /mucus membrane reaction • Itching • Swelling • Severe dizziness
MANAGEMENT	**Observation** If persists (more than one day): Avoid activities requiring alertness Supportive management (paracetamol, omeprazole, etc)	Investigate other causes Supportive treatment (paracetamol, ORS, antiseizure) **Consider referring to the hospital**	Antihistamine (Polaramine, chloropheniramine) Adrenaline, hydrocortisone if anaphylaxis, laryngo-edema **Transfer**

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FIG 23. MDA MEDICINES SUPPLY CHAIN FLOW

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RBC/ NTD Program does quantification of Medicines required for coming MDAs and submit the request to WHO, UNICEF, etc.

Requested products are delivered to national warehouse (MPPD) by **WHO UNICEF, etc.**

RBC/NTD program submits NTDs medicines distribution plan to the warehouse as by targeted MDA beneficiaries per district

District pharmacy proceed with acquisition of drugs from warehouse

Health Centers order at district Pharmacy according to targeted population in its catchment area

Health centers store unused drugs

CHWs order drugs from Health Center pharmacy for active administration in specific sites

Drugs being distributed to people (either in schools by **teachers** or in community by **CHWs**)

Remaining products during MDA are returned to Health center for proper storage and further use in next MDA