Malaria

Falciparum can kill in 24 hours · and it is missed by not asking, not by diagnostic difficulty

Ask where they have been
then repeat the smear

⚠ THE THREE THAT CARRY THE PAGE

⚠ ASK ABOUT TRAVEL IN EVERY FEVER

Fever in a returning traveler is malaria until excluded. Falciparum has no safe waiting period -a patient who looks well can be dead within a day- so **the workup is urgent even when they look stable**, and if suspicion is high with severe features you **start treatment while the smear is being read**. It is routinely called influenza or gastroenteritis, because the symptoms are entirely non-specific and **the classic periodic fever is usually ABSENT in non-immune travelers**. ⚠ **Taking prophylaxis does not exclude it** -none is fully protective and adherence is often imperfect.

⚠ ONE NEGATIVE SMEAR EXCLUDES NOTHING

Parasitemia fluctuates through the replication cycle, so it can sit below the detection threshold on the first sample. **Thick and thin smears every 12-24 h, and THREE negative sets before excluding. Thick = sensitivity** (finds low-level parasitemia). **Thin = species and PERCENT PARASITEMIA.** Request both -"a malaria smear" may get you one. **Stopping at a single negative smear is the commonest error after failing to ask about travel.**

THE SPECIES SPLIT

Falciparum kills, presents mostly within a month, no dormant liver stage. **Vivax and ovale** form **HYPNOZOITES**, so they appear months to years later and **relapse unless radical cure is given**. **Malariae** is mild, no hypnozoites. ⚠ **Knowlesi** replicates every 24 h and is **easily misread as malariae** -dangerous, because malariae gets treated as benign. Think of it with Southeast Asian travel.

⚠ SEVERE MALARIA: ANY ONE OF THESE MANDATES IV THERAPY

relapse = hypnozoites · recrudescence = surviving blood-stage parasites · reinfection = a new bite

Criterion	Detail
⚠ **Parasitemia ≥ 5%**	**The one that catches people out.** A patient who is talking, walking and normotensive at **7% parasitemia has severe malaria** and needs IV artesunate, not tablets. **Report percent parasitemia explicitly and repeat it** -it is both a severity criterion and the measure of response
The clinical criteria	**Impaired consciousness** (cerebral malaria) · **seizures** · **ARDS or pulmonary edema** · **metabolic acidosis** (one of the strongest predictors of death, and present before the pressure falls) · **AKI** · **DIC or bleeding** · **jaundice** · **Hb < 7 g/dL** · **hypoglycemia** · **shock**
Cannot take oral	**Also an indication for IV** even without other severe features -a vomited dose is no dose
Send alongside	**Glucose** (recheck often -parasite consumption, plus quinine-induced hyperinsulinemia), **lactate and gas**, CBC (**thrombocytopenia is a useful pointer**), creatinine, bilirubin and LFTs, coagulation, **quantitative G6PD** in vivax or ovale, and **BLOOD CULTURES -bacteremia coexists with severe malaria**, so finding parasites does not mean you found the only problem

TREATMENT

Situation	Regimen, and what to know
⚠ **SEVERE** IV artesunate	**Artesunate 2.4 mg/kg IV at 0, 12 and 24 hours. It replaced quinine on MORTALITY grounds**: **SEAQUAMAT** cut deaths from **22% to 15%** in adults (stopped early), **AQUAMAT** from **10.9% to 8.5%** in 5,425 African children. Also faster parasite clearance, less hypoglycemia and cardiotoxicity. ⚠ **Know where YOUR pharmacy stocks it before you need it** -time to first effective dose determines outcome, so give an interim agent rather than waiting
⚠ **After artesunate**	**Switch to oral once tolerating it AND parasitemia ≤ 1%.** ⚠ **Artesunate is NEVER the whole treatment** -its half-life is very short, so monotherapy leaves a high recrudescence rate. **A full oral course of a longer-acting agent must follow.** ⚠ **POST-ARTESUNATE DELAYED HEMOLYSIS:** falling Hb, rising LDH and jaundice **1-3 weeks after apparently successful treatment**. **Check Hb weekly for ~4 weeks and warn the patient**, or it gets worked up from scratch as something else
UNCOMPLICATED falciparum NEW 2026	⚠ **CDC now recommends artemether-lumefantrine for 5 DAYS (10 doses), extended from the long-standing 3-day course. Why:** spreading **artemisinin partial resistance, declining lumefantrine effectiveness**, and the fact that **US patients are non-immune travelers** who cannot rely on background immunity, and are larger on average than the populations where 3 days was established. **Do not prescribe the 3-day course from memory.** ⚠ **Must be taken with FATTY food** -lumefantrine absorption is poor without it, so a nauseated patient eating nothing is undertreated
Oral alternatives	**Atovaquone-proguanil** 3 days -**but not if malaria developed while taking it as prophylaxis**. **Quinine + doxycycline** -poorly tolerated: cinchonism, **hypoglycemia from hyperinsulinemia**, QT prolongation. **Chloroquine ONLY for confirmed chloroquine-sensitive infection** -**assume falciparum is resistant** unless you have specific reason not to
⚠ **VIVAX and OVALE** radical cure	**Blood-stage treatment leaves the hypnozoites, so the patient relapses.** Add **primaquine** (30 mg base daily × 14 days) or **tafenoquine** (single dose, with a compatible blood-stage regimen). ⚠ **QUANTITATIVE G6PD FIRST -mandatory**, since 8-aminoquinolines cause severe hemolysis in deficiency; intermediate activity may use a weekly primaquine schedule with monitoring. ⚠ **Contraindicated in PREGNANCY** (fetal G6PD unknown) -use **weekly chloroquine suppression until delivery**, then radical cure. **Adherence over 14 days once well is the usual failure point**

⚠ DIAGNOSTIC TRAPS · AND SUPPORTIVE CARE

⚠ THE RAPID TEST CAN MISLEAD YOU TWICE

False NEGATIVE where *hrp2/hrp3* gene deletions circulate, so a negative RDT does not overturn a strong clinical suspicion. And it **stays POSITIVE for weeks after cure**, so it cannot track response or diagnose a second episode. **PCR** is the most sensitive and best confirms species (knowlesi, mixed infections) but is **too slow to guide initial treatment**. **Tell the laboratory it is an urgent malaria smear** -a film that reaches the bench as a routine specimen loses hours that matter. **Malaria is notifiable.**

SUPPORTIVE CARE, AND WHAT NOT TO DO

Treat hypoglycemia and recheck repeatedly. ⚠ **Be careful with fluids** -these patients tolerate overload badly and **pulmonary edema is a recognized cause of death**, so resuscitate shock but do not run them wet. ⚠ **Exchange transfusion is NO LONGER recommended** -no survival benefit, real procedural risk. **Pregnancy:** more severe, and **IV artesunate is used in ALL trimesters** -untreated malaria is the greater risk. **Asplenia and immunosuppression** lower the threshold for admission and IV therapy.

PREVENTION · AND THE HIGHEST-RISK TRAVELER

Point	Detail
Chemoprophylaxis	**Atovaquone-proguanil, doxycycline, mefloquine or tafenoquine**, by destination, trip length and tolerability. ⚠ **Each has a different start and STOP schedule, and the terminal doses after leaving the area are the ones travelers abandon** -state the stop date explicitly
Bite avoidance	Insecticide-treated nets, repellent, and covering up **in the evening and overnight, when the *Anopheles* vector bites**. **No chemoprophylaxis is completely protective**
⚠ **Highest-risk group**	**Travelers visiting friends and relatives.** They skip pre-travel advice and **overestimate residual childhood immunity**, which wanes within a few years of leaving an endemic area. **Ask about this pattern specifically**

References: CDC clinical guidance on malaria diagnosis and treatment in the United States, including the 2026 extension of artemether-lumefantrine to a 5-day regimen · SEAQUAMAT, Lancet 2005 · AQUAMAT, Lancet 2010.

Educational aid; verify against current CDC guidance, local formulary and patient factors.