Dengue treatment latest guidelines

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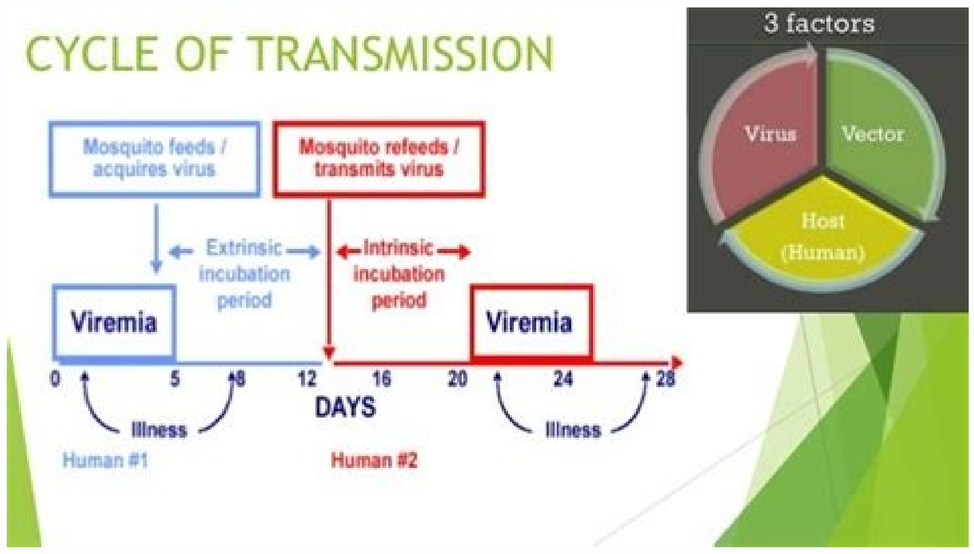

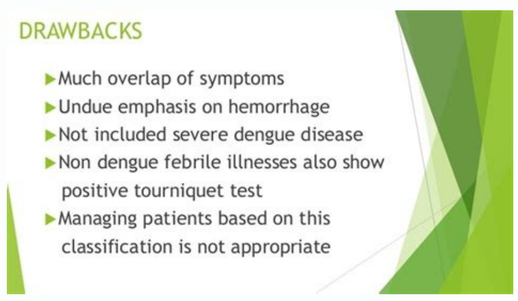

What is diagnosis of malaria. Best mosquito repellent for dengue. What is disease screening.

World Health Organization. (2009). Dengue guidelines for diagnosis, treatment, prevention and control : new edition. World Health Organization. Evidence-based guidelines are one of the most useful tools for improving public health and clinical practice. Their purpose is to formulate interventions based on strong evidence of efficacy, avoid unnecessary risks, use resources efficiently, reduce clinical variability and, in essence, improve health and ensure quality care, which is the purpose of health systems and services. These guidelines were developed following the GRADE methodology, with the support of a panel of clinical experts from different countries, all convened by the Pan American Health Organization. By responding to twelve key questions about the clinical diagnosis and treatment of dengue, chikungunya, and Zika, evidence-based recommendations were formulated for pediatric, youth, adult, older adult, and pregnant patients who are exposed to these diseases or have a suspected or confirmed diagnosis of infection. The purpose of the guidelines is to prevent progression to severe forms of these diseases and the fatal events they may cause. The recommendations are intended for health professionals, including general, resident, and specialist physicians, nursing professionals, and medical and nursing students, who participate in caring for patients with suspected dengue, chikungunya, or Zika. They are also intended for health unit managers and the executive teams of national arboviral disease prevention and control programs, who are responsible for facilitating the process of implementing these guidelines. Guidelines for the Clinical Diagnosis and Treatment of Dengue, Chikungunya, and Zika. Washington, D.C.: Pan American Health Organization; 2022. License: CC BY-NC-SA 3.0 IGO. . The magnitude of the dengue problem has increased dramatically and has extended geographically to many previously unaffected areas. It remains the most important arthropod-borne viral disease of humans. This new edition has been produced to make widely available to health practitioners,laboratory personnel, those involved in vector control and other public health officials, a concise source of information of worldwide relevance on dengue. The guidelines provide updated practical information on the clinical management and delivery of clinical services; vector management and delivery of vector control services; laboratory diagnosis and diagnostic tests; and surveillance, emergency preparedness and response. Since the second edition of Dengue haemorrhagic fever: diagnosis, treatment, prevention and control was published by the World Health Organization (WHO) in 1997, the magnitude of the dengue problem has increased dramatically and has extended geographically to many previously unaffected areas. It was then, and remains today, the most important arthropod-borne viral disease of humans. Activities undertaken by WHO regarding dengue are most recently guided at the global policy level by World Health Assembly resolution WHA55.17 (adopted by the Fifty-fifth World Health Assembly in 2002) and at the regional level by resolution CE140.R17 of the Pan American Sanitary Conference (2007), resolution WPR/RC59.R6 of the WHO Regional Committee for the Western Pacific (2008) and resolution SEA/RC61/R5 of the WHO Regional Committee for South-East Asia (2008) This new edition has been produced to make widely available to health practitioners, laboratory personnel, those involved in vector control and other public health officials, a concise source of information of worldwide relevance on dengue. The guidelines provide updated practical information on the clinical management and delivery of clinical services; vector management and delivery of vector control services; laboratory diagnosis and diagnostic tests; and surveillance, emergency preparedness and response. Looking ahead, some indications of new and promising avenues of research are also described. Additional and more detailed specific guidance on the various specialist areas related to dengue are available from other sources in WHO and elsewhere, some of which are cited in the references. Dengue fever is an arbovirus transmitted to humans by the bite of a mosquito (Aedes). Transmission by transfusion of contaminated blood and transplacental transmission to the foetus have also been reported. Four different serotypes of dengue have been described. Infection with one serotype provides a lifelong immunity to that specific serotype, but only partial, short-term immunity to other serotypes. There is no specific antiviral treatment. Dengue is a mainly urban disease, present in tropical and subtropical regions , in particular in Asia, Central and South America and the Caribbean. Outbreaks have been described in Eastern Africa. Primary infection may be asymptomatic or present as mild dengue fever. Subsequent infections increase the risk of severe dengue. Clinical features After the incubation period (4 to 10 days), the illness occurs in 3 phases: Febrile phase: high fever (39 to 40 °C) lasting 2 to 7 days, often accompanied by generalized aches, a maculopapular rash and mild haemorrhagic manifestations. Critical phase (between the third and seventh day): decrease in temperature. The majority of patients will have dengue without warning signs and proceed to the recovery phase. Certain patients will develop dengue with warning sign(s) or severe dengue. Recovery phase: patient improves, vital signs normalise, gastrointestinal symptoms subside and appetite returns. At times, bradycardia and generalized pruritus. Symptoms according to severity (adapted from the WHO) Dengue without warning signs Fever + 2 of the following symptoms: Nausea, vomiting Rash resembling measles Generalized aches (headache, retro-orbital pain, myalgias, arthralgias) Benign mucocutaneous bleeding (petechiae, positive tourniquet test , epistaxis, gingival bleeding) Leucopenia Dengue with warning signs Presence of at least one of these symptoms: Abdominal pain Persistent vomiting Fluid accumulation (ascites, pleural effusion) Mucosal bleeding Hepatomegaly (> 2 cm) Agitation or lethargy Increasing haematocrit and rapidly dropping platelet count Severe dengue Severe plasma leakage with: Fluid accumulation (ascites, pleural effusion) + respiratory distress Compensated shock: weak and rapid pulse, hypotension, cold extremities, capillary refill time > 3 seconds Decompensated shock: heart rate and blood pressure unrecordable Severe mucocutaneous bleeding Multiorgan failure e.g.: hepatic or cardiac failure, obtundation, coma Major differential diagnoses Malaria, influenza, measles, Chikungunya, mononucleosis, primary HIV-infection, sepsis, meningococcemia, typhoid fever, viral haemorrhagic fever, leptospirosis. Laboratory Diagnosis Rapid diagnostic test (serum, plasma or whole blood) detects NS1 viral antigen during the febrile phase and IgM and IgG antibodies during the critical and recovery phases. This test indicates the likely presence of an infection with dengue virus but the results must be confirmed by molecular techniques (PCR) in a reference laboratory. Monitoring the haematocrit (Hct) and complete blood count The haematocrit (and not the haemoglobin) is the only test that shows haemoconcentration or increased vascular permeability (plasma leakage). The Hct reflects disease evolution and suggests therapeutic response. In children and pregnant women and if possible, in all patients, measure a reference Hct (Hct 0) at the first visit (during the febrile phase or before the critical phase). Measure baseline Hct on admission before administering fluid boluses (Hct 1) for all patients in Groups B and C then monitor Hct to determine therapy. An increase in the Hct with a rapid drop in the platelet count (≤ 100 000/mm3) is a warning sign. In case of hemodynamic instability or signs of shock: An increased or a persistently high Hct (> 50% in men or an increase relative to the previous Hct in women and children) indicates severe plasma leakage; A decrease in Hct (< 40-45% in men, < 35-40% in women and children 1 year and older, < 30-35% in children under 1 year) may indicate a haemorrhage. Leukopenia (< 5 000/mm3) is frequent. Treatment Patients in Group A Patients with no warning signs, able to drink sufficiently and with a normal urine output. Treat as outpatients, bed rest and good hydration. Fever: paracetamol PO at the usual doses (see Fever, Chapter 1), maintaining a strict 6 to 8 hour interval between doses. Do not prescribe acetylsalicylic acid, ibuprofen or other AINS drugs. Seek medical attention if: no clinical improvement, persistent vomiting, cold extremities, agitation or lethargy, breathing difficulties or absence of urine output. If follow-up is impossible or symptoms cannot be monitored at home (patients living far from the health care facility/living alone), hospitalise for observation. Patients in Group B Patients with warning sign(s) or co-morbidities (e.g. diabetes mellitus, hypertension, cardiac or renal failure, sickle cell anaemia) or at risk populations (pregnant women, infants, the elderly, patients with difficulty drinking). In all cases: Hospitalise; place the patient under a mosquito net. Measure Hct 1 and baseline platelet count. Avoid invasive procedures (nasogastric tube, IM injections) to minimize the risk of bleeding. Fever: paracetamol PO as in Group A. In case of hepatitis, administer with caution and decrease the dose (children: 10 mg/kg 3 times daily; adults: 500 mg 3 times daily; maintaining a strict 8-hour interval between doses). If warning signs or dehydration: Place an intravenous line and start hydration with Ringer lactate. Monitor the Hct every 4 to 6 hours until the patient is stabilized. The volume and rate of Ringer lactate administration is determined by the vital signs: heart rate (HR), blood pressure (BP) and by the evolution of the Hct. See Table 1 – Group B: dengue with warning signs or dehydration. Monitor fluid balance: intake (IV and oral) and output (urine). Monitor urine output every 4 hours: administer the volume of IV fluids necessary to ensure that the urine output is at least 1 ml/kg/hour in children and 0.5 ml/kg/hour in adults. If unavailable, ensure that the patient is urinating at least every 4 hours. Table 1 – Group B: dengue with warning signs or dehydration Measure Hct 1 then Children and adults:Ringer lactate 5-7 ml/kg/h for 1-2 h 3-5 ml/kg/h for 2-4 h 2-3 ml/kg/h for 2-4 h or less depending on clinical response Re-evaluate the clinical signs (vital signs, capillary refill time, urine output) hourly and measure Hct 2 then repeat the Hct every 4-6 hours or more if necessary. Adjust the rate of the IV infusion in order to maintain a urine output of 1-2 ml/kg/h in children and 0.5 ml/kg/h in adults. Hct 2 identical to Hct 1 or minimally increased Children and adults:Ringer lactate 2-3 ml/kg/h for 2-4 h Hct 2 increased relative to Hct 1 and/or tachycardia and/or hypotension (if shock: see Group C) Children and adults:Ringer lactate 5-10 ml/kg/h for 1-2 h Re-evaluate the clinical signs and measure Hct 3. Hct stable Children and adults:Ringer lactate 3-5 ml/kg/h for 2-4 h 2-3 ml/kg/h or less depending on clinical response Hct increased or vital signs unstable Children and adults:Ringer lactate 5-10 ml/kg/h for 1-2 h and re-evaluate as above If no improvement treat as a Group C patient. If improvement (disappearance of the danger signs, improvement of the urine output or PO fluid intake or normalisation of the Hct) gradually reduce the rate of IV fluid administration. Duration of IV fluid administration: 24-48 h. Patients in Group C Patients with severe dengue requiring emergency treatment. In all cases: Hospitalise in intensive care; place the patient under a mosquito net. Administer oxygen (O2) continuously: to maintain the SpO2 between 94 and 98% if it is ≤ 90% or if the patient has cyanosis or respiratory distress; if pulse oxymeter is not available: at least 5 litres/minute or to relieve the hypoxia and improve respiration. Before first bolus, measure Hct 1, baseline platelets count and blood group, then monitor the Hct every 1 to 4 hours until the patient is stabilized. Check for the presence of the shock: rapid and weak pulse, low BP or narrow pulse pressure, cold extremities, capillary refill time > 3 seconds. Mark the size of the liver with a pen on admission. The volume and rate of Ringer lactate or plasma substitute administration is determined by the vital signs (HR, BP) and by the evolution of the Hct. See Table 2 – Group C: dengue with compensated shock or Table 3 – Group C: dengue with decompensated shock. Monitor urine output: same monitoring as in Group B. Monitor signs of fluid overload (especially in children): Increase in RR ≥ 10/minute or tachypnoea; Increase in HR ≥ 20/minute or tachycardia and SpO2 < 90%; Rales and/or pulmonary oedema (fine crackles); Gallop rhythm on cardiac auscultation; Increase in liver size; Peripheral oedema (e.g. eyelid oedema). In the event of fluid overload, stop the IV infusion if vital signs are stable. In the event of respiratory distress with rales, administer furosemide IV (see Heart failure, Chapter 12) if the patient is not in shock. Avoid invasive procedures (nasogastric tube, IM injections) to minimize the risk of bleeding. Transfuse patients with fresh whole blood in case of significant bleeding or if a low Hct does not improve with resuscitation. The post-transfusion Hct should be interpreted with caution. When the patient improves, stop the IV infusion to avoid fluid overload. Table 2 – Group C: dengue with compensated shock (BP maintained but signs of shock present) Measure Hct 1 then give Ringer lactate (first bolus) Children: 10-20 ml/kg in 1 h Adults: 5-10 ml/kg in 1 h If improvement (no signs of shock present) Reduction of rate: Children:Ringer lactate 10 ml/kg/h for 1-2 h 7 ml/kg/h for 2 h 5 ml/kg/h for 4 h 3 ml/kg/h Adults:Ringer lactate 5-7 ml/kg/h for 1-2 h 3-5 ml/kg/h for 2-4 h 2-3 ml/kg/h for 2-4 h If no improvement (signs of shock present): measure Hct 2. Hct 2 increases or stays elevated Children: plasma substitute 10-20 ml/kg in 1 h (second bolus) 10 ml/kg in 1 h 7 ml/kg in 1 h Adults: Ringer lactate or plasma substitute 10-20 ml/kg in 1 h (second bolus) Hct 2 decreases Look for severe haemorrhage. If improvement (no signs of shock present) Children:Ringer lactate according to “Reduction of rate in children” Adults:Ringer lactate 7-10 ml/kg/h for 1-2 h Then according to “Reduction of rate in adults” If no improvement (signs of shock present) Measure Hct 3 and proceed as above from “Measure Hct 2”. No severe haemorrhage Children and adults:plasma substitute 10-20 ml/kg in 1 h Evaluate need for transfusion if no improvement. Severe haemorrhage Transfuse Children and adults:fresh whole blood 10-20 ml/kg Verify presence of signs of shock, of fluid overload and measure Hct, then reduce the rate as in “Reduction of rate” if signs of shock are absent. Reduce the rate when the HR and BP normalise. Always check for signs of fluid overload. Continue for 24-36 h (less if PO hydration is tolerated). Supplemental boluses of crystalloids or colloids may be necessary in the next 24 h. Do not administer IV fluids for more than 48 h. Table 3 – Group C: dengue with decompensated shock (pulse and blood pressure unrecordable) Measure Hct 1 then Ringer lactate or plasma substitute (if pulse pressure < 10 mmHg or severe hypotension) IV or IO : Children and adults: 20 ml/kg in 15-30 min (first bolus) If improvement (no signs of shock present) Children:plasma substitute 10 ml/kg in 1 h Adults:Ringer lactate or plasma substitute 10 ml/kg in 1 h Reduction of rate:Ringer lactate Children: 10 ml/kg in 1 h 7 ml/kg/h for 2 h 5 ml/kg/h for 4 h 3 ml/kg/h Adults: 5-7 ml/kg/h for 1-2 h 3-5 ml/kg/h for 2-4 h 2-3 ml/kg/h for 2-4 h If no improvement (signs of shock present) Compare Hct 1 (obtained before the first bolus) to Hct 0 (obtained during the febrile phase or before the critical phase). Hct 1 increases or stays elevated relative to Hct 0 Children and adults:plasma substitute 10-20 ml/kg in 30-60 min (second bolus) Verify the presence of signs of shock or of fluid overload. Hct 1 decreases relative to Hct 0 Verify the vital signs and look for signs of severe haemorrhage. If improvement Children and adults:plasma substitute 7-10 ml/kg/h for 1-2 h Then Children and adults:Ringer lactate as in “Reduction of rate” If no improvement: measure Hct 2 No severe haemorrhage Children and adults:plasma substitute 10-20 ml/kg in 30-60 min (second bolus) Transfuse if no improvement. Severe haemorrhage Transfuse Children and adults:fresh whole blood 10-15 ml/kg If Hct 2 < Hct 1: Severe haemorrhage Transfuse Children and adults:fresh whole blood 10-15 ml/kg If Hct 2 ≥ Hct 1: No severe haemorrhage Children and adults:plasma substitute (third bolus) 10-20 ml/kg in 30-60 min 7-10 ml/kg/h for 1-2 h If improvement Children and adults:Ringer lactate as in “Reduction of rate” If no improvement Measure Hct 3 and proceed as above from “Measure Hct 2”. Verify the presence of signs of shock or of fluid overload and measure Hct. Reduce the IV fluid rate when HR and BP normalise; continue for 24-48 h (or less if PO hydration tolerated). Supplemental boluses of crystalloids or colloids may be necessary in the next 24 h. Do not administer IV fluids for more than 48 h. Prevention Individual protection: long sleeves and trousers, repellents, mosquito net (Aedes bites during the day).

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