

## West Nile virus risk assessment tool

Risk level	Description and triggers	Questions to be addressed	Surveillance activities	Suggested public health actions and interventions
0	<ul style="list-style-type: none"> <li>Free area</li> <li>No historical circulation of WNV</li> </ul>	Is there any risk of WNV transmission in this area?	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>Human: passive surveillance</li> <li>Veterinary: passive surveillance for horses</li> <li>SoHO: standard haemovigilance, biovigilance and post-transfusion/transplantation surveillance (not specific for WNV)</li> </ul>	<p>Health sector</p> <ul style="list-style-type: none"> <li>Increase awareness amongst healthcare professionals about WNV so as it will be considered in the differential diagnosis of travellers returning from affected areas.</li> <li>Education of travellers to affected areas on how to reduce the risk.</li> <li>Ensure there are laboratory capabilities within the country for diagnosis.</li> <li>Ensure SoHo donation authorities have implemented measures to prevent transmission through travellers returning from affected areas (see WNV and blood safety introduction to a preparedness plan [67]).</li> </ul>
1	<ul style="list-style-type: none"> <li>Predisposed areas where the ecological conditions are suitable for WNV circulation.</li> <li>No historical circulation of WNV is known.</li> <li>The probability of a human outbreak is unknown but likely to be low.</li> </ul>	<ul style="list-style-type: none"> <li>Is there any risk of WNV transmission in this area in the season?</li> <li>Would we detect WNV circulation if it occurred?</li> </ul>	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>Human: passive surveillance</li> <li>Veterinary: passive surveillance for horses;</li> <li>SoHO: standard haemovigilance-biovigilance and post-transfusion/transplantation surveillance (not specific for WNV)</li> </ul> <p>Desirable:</p> <ul style="list-style-type: none"> <li>Assess the risk of WNV transmission in the area.</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Consider drafting WNV preparedness plan</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> <li>Ensure there are laboratory capabilities within the country for diagnosis of WNV</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>No specific action</li> </ul> <p>Vector management response</p> <ul style="list-style-type: none"> <li>No specific action.</li> </ul>
2	<ul style="list-style-type: none"> <li>Imperilled areas where the ecological conditions are suitable for WNV circulation</li> <li>Past evidence of WNV circulation</li> <li>The probability of a human outbreak is unknown.</li> </ul>	<ul style="list-style-type: none"> <li>To what extent has the virus infected local animal populations?</li> <li>What is the prevalence of infection in animal populations?</li> <li>Are passive/active surveillance systems (including laboratory diagnostics) in place to be able to identify horse and human infections with WNV?</li> </ul>	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>As above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Ensure timely detection and reporting of human cases by passive surveillance;</li> <li>Develop and implement a surveillance plan including mosquito, bird and equid surveillance enabling the detection of WNV circulation.</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Develop a WNV preparedness plan, including surveillance activities and an integrated vector control plan.</li> <li>Allocate resources necessary to enable emergency response (i.e. vector control, communication plan).</li> <li>Establish close and regular exchange of information between all sectors as part of the WNV preparedness plan.</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>to assure an appropriate level of awareness among health care professionals;</li> <li>to define roles and responsibilities, but also training courses, curricula, information and management recommendations;</li> <li>availability of national guidelines for clinical management.</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>Conduct public information campaigns during the mosquito season to strengthen use of personal protection measures against</li> </ul>

				<p>mosquito bites.</p> <p>Vector management response</p> <ul style="list-style-type: none"> <li>As part of the WNV preparedness plan: consider preparing vector control activities if entomological indicators suggest the need.</li> <li>Allocate resources necessary to enable emergency response (i.e. vector control).</li> <li>Implement larval control as part of the integrated vector control in the event of there having been WNV circulation in the previous year.</li> </ul>
3a	<ul style="list-style-type: none"> <li>Imperilled areas</li> <li>Current surveillance findings (i.e. mosquito or bird screening) indicating WNV epizootic activity in the area in the second part of the season (i.e. August-September-October)</li> <li>The probability of a human outbreak is low.</li> </ul>	<ul style="list-style-type: none"> <li>What is the geographic extension of the area where WNV is circulating?</li> <li>What is the seasonal dynamic of WNV circulation?</li> <li>What is the real risk for people?</li> </ul>	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>As above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Ensure timely detection and reporting of human cases by passive surveillance.</li> <li>As part of the surveillance plan: ensure the proper continuation of the surveillance activities.</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>Consider public information campaigns to support vector control response</li> </ul> <p>Vector management response</p> <ul style="list-style-type: none"> <li>Response as level above;</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Implement public education programs focused on risk potential and personal protection, and emphasising residential source reduction.</li> <li>Vector control focuses on larval control.</li> </ul>
3b	<p>Imperilled areas</p> <ul style="list-style-type: none"> <li>Current surveillance findings (i.e. mosquito or bird screening) indicating WNV epizootic activity in the area, in the first part of the season (May-June-July)</li> <li>The probability of a human outbreak is low to moderate.</li> </ul>	Idem as level above	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>As above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Human: active/enhanced surveillance in the area with confirmed virus circulation.</li> <li>Ensure timely reporting of human cases by passive/active surveillance.</li> <li>As part of the surveillance plan: increase the mosquito and bird surveillance activities.</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Implement public information on personal protection and source reduction</li> </ul> <p>Vector management response</p> <ul style="list-style-type: none"> <li>Response as level above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>increase effort for public information on personal protection and source reduction</li> <li>continued larval control</li> <li>If surveillance indicates virus circulation is increasing initiate ground adult mosquito control in areas at high risk for humans or in hot spot sites (if known)</li> </ul>
4	<p>Imperilled areas</p> <ul style="list-style-type: none"> <li>WNV-specific IgM detected in local non-vaccinated horse(s) or WNV isolated from local horse.</li> <li>The probability of a human outbreak is high.</li> </ul>	<p>What is the geographic extension of the area where WNV is being transmitted to horses (as humans are likely to follow soon)?</p>	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>As above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Human: active/enhanced surveillance in the area with confirmed virus circulation</li> <li>Ensure timely reporting of human cases by passive/active surveillance</li> <li>As part of the</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Create/establish multi-sectoral outbreak response team</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> <li>Increase awareness among health professionals</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>Conduct public information campaigns to strengthen use of personal protection measures against mosquito bites and source reduction.</li> </ul>

			<p>surveillance plan: increase the mosquito, bird and horse surveillance activities.</p>	<p>Vector management response</p> <ul style="list-style-type: none"><li>• Response as level above</li><li>• If surveillance indicates virus circulation is increasing, initiate ground adult control in high-risk areas for humans or in hot spot sites (if known).</li></ul>
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5	<p>Affected area</p> <ul style="list-style-type: none"> <li>At least one human case detected (i.e. probable or confirmed human case according to EU case definition).</li> <li>Outbreak ongoing.</li> </ul>	<ul style="list-style-type: none"> <li>What is the geographic extension of the 'affected area' where WNV is being transmitted to humans?</li> <li>What is the risk of increasing numbers of human cases?</li> </ul>	<p>Obligatory:</p> <ul style="list-style-type: none"> <li>As above</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Human: active/enhanced surveillance in the area with confirmed virus circulation.</li> <li>Ensure timely reporting of human cases by passive/active surveillance.</li> <li>As part of the surveillance plan: continue the surveillance activities.</li> </ul>	<p>Multi-sectoral collaboration and coordination</p> <ul style="list-style-type: none"> <li>Regular meetings of multi-sectoral outbreak emergency response team</li> <li>Establishment of geographical boundaries of affected area.</li> </ul> <p>Health sector</p> <ul style="list-style-type: none"> <li>Response as level above</li> <li>Increase awareness among health professionals</li> <li>Safety of SoHO: implement EU directive for blood, tissues, cells and organ safety in affected area, quantitative risk assessment of transfusions/transplantations, implement deferral policy, +/- NAT screening, +/- inactivation techniques, evaluate impact of measures implemented on blood supplies.</li> </ul> <p>Public communication</p> <ul style="list-style-type: none"> <li>Response as level above;</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Increase public information campaigns in order to reach most people at risk.</li> </ul> <p>Vector management response</p> <ul style="list-style-type: none"> <li>Response as level above;</li> </ul> <p>AND:</p> <ul style="list-style-type: none"> <li>Intensify ground adult mosquito control with multiple applications in areas of high risk of human cases.</li> <li>Enhance risk communication.</li> <li>Monitor efficacy of spraying on target mosquito populations.</li> <li>If a large area is involved coordinate the programme through an emergency unit with all authorities involved.</li> </ul>

