*Epidemiology and Infection*

**Quantitative risk assessment of the introduction of rabies into Japan through the importation of dogs and cats worldwide**

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**SUPPLEMENTARY MATERIAL**

Supplementary Table S1. Probability of infection in a single dog or cat imported into Japan (*R*) from each sub-region or region

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Region | Sub-region | *RS* | *RR* | *Raqs,worldwide* / *Rusj,worldwide* | *Rworldwide* |
| AQS | Africa | Eastern Africa | 1.72E-8 (4.37E-9, 4.04E-8) | 2.77E-8 | (4.6E-9, | 4.6E-9) | 1.62E-9 | (5.76E-12, | 7.14E-9) | 2.16E-9  | (6.65E-11, | 6.48E-9) |
|  |  | Middle Africa | 6.48E-7 (1.65E-7, 1.53E-6) |  |  |  |
| Northern Africa | 1.59E-8 (4.3E-9, 3.74E-8) |
| Western Africa | 4.67E-8 (1.19E-8, 1.1E-7) |
| Southern Africa | 1.35E-8 (3.42E-9, 3.17E-8) |
| Asia | Eastern Asia | 8.45E-10 (2.15E-10, 1.99E-9) | 2.93E-9 | (2.39E-10, | 1.21E-8) |
|  | Central Asia | 1.75E-8 (4.44E-9, 4.13E-8) |  |
| Southern Asia | 5.09E-9 (1.3E-9, 1.2E-8) |
| South-Eastern Asia | 7.32E-9 (1.86E-9, 1.73E-8) |
| Western Asia | 3.17E-8 (8.06E-9, 7.47E-8) |
| Europe | Eastern Europe | 6.91E-9 (1.75E-9, 1.59E-8) | 1.44E-9 | (1.23E-11, | 8.42E-9) |
|  | Northern Europe | 2.3E-10 (5.69E-11, 5.33E-10) |  |
| Southern Europe | 7.78E-10 (1.96E-10, 1.81E-09) |
| Western Europe | 3.27E-11 (7.25E-12, 7.88E-11) |
| Latin America and Caribbean | Caribbean | 9.55E-8 (2.41E-8, 2.25E-7) | 5.44E-9 | (2.85E-1, | 4.89E-9) |
| Central America | 1.34E-9 (3.39E-10, 3.16E-9) |  |
|  | South America | 1.04E-9 (2.63E-10, 2.43E-9) |
| North America | Northern America | 4.69E-10 (1.19E-10, 1.11E-9) | 4.69E-10 | (1.19E-10, | 1.11E-9) |
| USFJ | Africa | Eastern Africa | 8.76E-8 (7.78E-8, 9.78E-8) | 6.97E-8 | (5.39E-8, | 8.72E-8) | 4.04E-9 | (1.74E-9, | 3.39E-9) |
|  | Middle Africa | 3.35E-6 (2.61E-6, 4.17E-6) |  |  |
|  | Northern Africa | 8.36E-8 (5.75E-8, 1.14E-7) |
| Western Africa | 2.42E-7 (1.84E-7, 3.07E-7) |
| Southern Africa | 6.97E-8 (5.39E-8, 8.72E-8) |
| Asia | Eastern Asia | 4.39E-9 (3.29E-9, 5.63E-9) | 2.46E-8 | (3.38E-9, | 1.6E-7) |
|  | Central Asia | 9.79E-8 (5.1E-8, 1.57E-7) |  |
| Southern Asia | 2.63E-8 (2.01E-8, 3.33E-8) |
| South-Eastern Asia | 3.74E-8 (3.34E-8, 4.16E-8) |
| Western Asia | 1.65E-7 (1.22E-7, 2.12E-7) |
| Europe | Eastern Europe | 3.51E-8 (3.15E-8, 3.88E-8) | 2.54E-9 | (6.94E-11, | 5.81E-9) |
|  | Northern Europe | 1.47E-9 (4.9E-10, 2.87E-9) |  |
| Southern Europe | 4.2E-9 (2.5E-9, 6.29E-9) |
| Western Europe | 3.43E-10 (4.33E-11, 8.78E-10) |
| Latin America and Caribbean | Caribbean | 5.49E-7 (2.58E-7, 9.27E-7) | 8.45E-8 | (4.53E-9, | 6.08E-7) |
| Central America | 7.17E-9 (4.44E-9, 1.04E-8) |  |
|  | South America | 5.41E-9 (3.93E-9, 7.07E-9) |
| North America | Northern America | 2.44E-9 (1.84E-9, 3.11E-9) | 2.44E-9 | (1.84E-9,  | 3.11E-9) |

Values are presented in: Mean (5th percentile, 95th percentile); E-n refers to multiplying by 10-n. The number of rabies cases was assumed to be zero for the following sub-regions: Australia/New Zealand, Melanesia, Micronesia and Polynesia. The *RS* for all these sub-regions were therefore assumed to be zero.

Supplementary Table S2. Annual probability of importing at least one infected dog or cat (*P*) from each sub-region or region

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Region | Sub-region | *PS* | *PR* | *Paqs,worldwide* / *Pusfj,worldwide* | *Pworldwide* |
| AQS | Africa | Eastern Africa | 5.82E-7 | (1.45E-7, 1.37E-6) | 3.02E-6 | (7.43E-7,  | 7.12E-6) | 2.02E-5 | (5.15E-6, | 4.65E-5) | 2.57E-5 | (1.06E-5, | 5.22E-5) |
|  |  | Western Africa | 2E-6 (4.94E-7, 4.71E-6) |  |  |  |
| Southern Africa | 4.3E-7 (1.06E-7, 1.01E-6) |
| Asia | Eastern Asia | 2.51E-6 (6.23E-7, 5.9E-6) | 1.16E-5 | (2.86E-6, | 2.72E-5) |
|  | Central Asia | 2.1E-7 (5.18E-8, 4.96E-7) |  |
| Southern Asia | 2.94E-7 (7.31E-8, 6.9E-7) |
| South-Eastern Asia | 5.95E-6 (1.47E-6, 1.4E-5) |
| Western Asia | 2.62E-6 (6.48E-7, 6.15E-6) |
| Europe | Eastern Europe | 2.09E-6 (5.31E-7, 4.8E-6) | 2.37E-6 | (6.02E-7, | 5.43E-6) |
|  | Northern Europe | 1.43E-7 (3.53E-8, 3.31E-7) |  |
| Southern Europe | 1.15E-7 (2.9E-8, 2.68E-7) |
| Western Europe | 1.84E-8 (4.08E-9, 4.43E-8) |
| Latin America and Caribbean | Caribbean | 6.67E-7 (1.67E-7, 1.57E-6) | 8.29E-7 | (2.07E-7, | 1.94E-6) |
| Central America | 5.73E-8 (1.41E-8, 1.34E-7) |  |
|  | South America | 1.05E-7 (2.58E-8, 2.46E-7) |
| North America | Northern America | 2.27E-6 (5.59E07, 5.35E-6) | 2.27E-6 | (5.59E-7, | 5.35E-6) |
| USFJ | Africa | Southern Africa | 6.97E-8 (5.38E-8, 8,72E-8) | 6.97E-8 | (5.38E-8, | 8.72E-8) | 5.45E-6 | (4.51E-6, | 6.51E-6) |
|  | Asia | Eastern Asia | 1.41E-7 (1.05E-7, 1.8E-7) | 1.06E-6 | (8.88E-7, | 1.26E-6) |  |
|  | South-Eastern Asia | 2.62E-7 (2.34E-7, 2.91E-7) |  |
| Western Asia | 6.59E-7 (4.9E-7, 8.48E-7) |
| Europe | Eastern Europe | 7.01E-8 (6.3E-8, 7.76E-8) | 1.66E-7 | (1.3E-7, | 2.07E-7) |
|  | Northern Europe | 2.65E-8 (8.82E-9, 5.17E-8) |  |
| Southern Europe | 5.88E-8 (3.46E-8, 8.81E-8) |
| Western Europe | 1.1E-8 (1.39E-9, 2.81E-8) |
| Latin America and Caribbean | Caribbean | 5.49E-7 (2.58E-7, 9.27E-7) | 5.92E-7 | (2.97E-7, | 9.65E-7) |
| Central America | 4.3E-8 (2.67E-8, 6.26E-8) |  |
| North America | Northern America | 3.56E-6 (2.68E-6, 4.55E-6) | 3.56E-6 | (2.68E-6, | 4.55E-6) |

Values are presented in: Mean (5th percentile, 95th percentile); E-n refers to multiplying by 10n. There was no import of dogs or cats into Japan during 2010 to 2013 from the following sub-regions: Middle Africa and Northern Africa (via AQS); Eastern Africa, Middle Africa, Northern Africa Western Africa, Central Asia, Southern Asia and South America (via USFJ). The number of rabies cases was assumed to be zero for the following sub-regions: Australia/New Zealand, Melanesia, Micronesia and Polynesia. The *PS* for all these sub-regions were therefore assumed to be zero.