

CUTE MONKEYS? OR RABIES RISK?

*THE SIGNS AREN'T ALWAYS
CLEAR ON HOLIDAY*

Rabies risk information
for healthcare practitioners



RABIES KEY FACTS

Rabies infection may only take a scratch

- Rabies can occur as the result of a bite or scratch from an infected domestic or wild mammal, or from direct contact between their saliva and a person's broken skin or mucous membrane¹⁻⁷
- The extent of exposures that can lead to rabies infection vary, from severe bites to small, superficial skin lesions that can often go unrecognized and unreported^{1,3-8}
- Children under 15 make up 40% of those bitten by suspect rabid creatures, as they are generally more likely to interact with animals^{1,2,8}

Rabies is almost always fatal when left untreated

- When infected with rabies, progressive and fatal inflammation of the brain develops after the virus spreads there through the nervous system^{1,3}
- There is no cure for rabies once clinical symptoms appear; however, prompt administration of post-exposure prophylaxis (PEP) can prevent the onset of symptoms and death^{1,8,9}
- Pre-exposure prophylaxis (PrEP) shortens and simplifies PEP^{4,10,11}

Rabies is still present globally

- Rabies is present in more than 150 countries mainly in Asia and Africa¹
- Globally, up to 99% of rabies transmissions to humans are via dogs; in the Americas, bats are now the major source of rabies deaths.^{1,6} However all mammals can catch rabies and pass it on, including cats and monkeys^{1,6}
- Traveler exposure to animals is often reported in popular destinations where rabies is endemic^{12,13}

Risk factors for rabies exposure include:^{2,13,14}

- Travel to Southeast Asia, India, and North Africa
 - Young age
 - Traveling for tourism

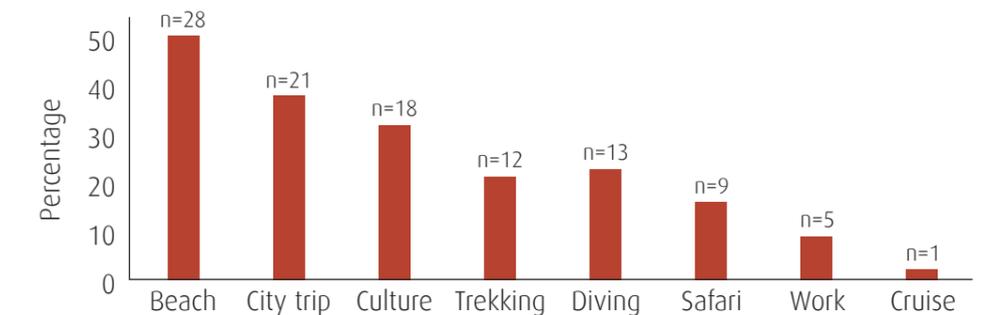


PLANS DISCUSSED AT PRE-TRAVEL CONSULTATIONS CAN CHANGE SPONTANEOUSLY ON THE TRIP

- Although most travelers plan carefully before their trip, pre-travel plans do not adequately reflect what travelers do, often changing their minds about travel arrangements once their trip has begun.¹⁵ These spontaneous activities can put travelers at an unanticipated risk of rabies¹⁵

TRAVEL-RELATED RISKS ARE MORE OFTEN UNDER- THAN OVER-ESTIMATED, ESPECIALLY REGARDING RABIES¹⁵

- Travelers who had a potential rabies exposure (N=62) listed the main reason for travel as tourism (67%), with their main activities being popular choices rather than activities normally associated as high risk¹⁴



Main activity of travelers with potential exposure to rabies¹⁴

- Animal exposures often occur at the beginning of a trip.^{13,14} In a study looking at potential rabies exposures in adult travelers, more than half of the exposures occurred during the first 2 weeks of travel.¹⁴ Pre-travel assessment of risk should not, therefore, be based only on duration of stay

RABIES IS ENDEMIC IN MANY POPULAR TOURIST DESTINATIONS

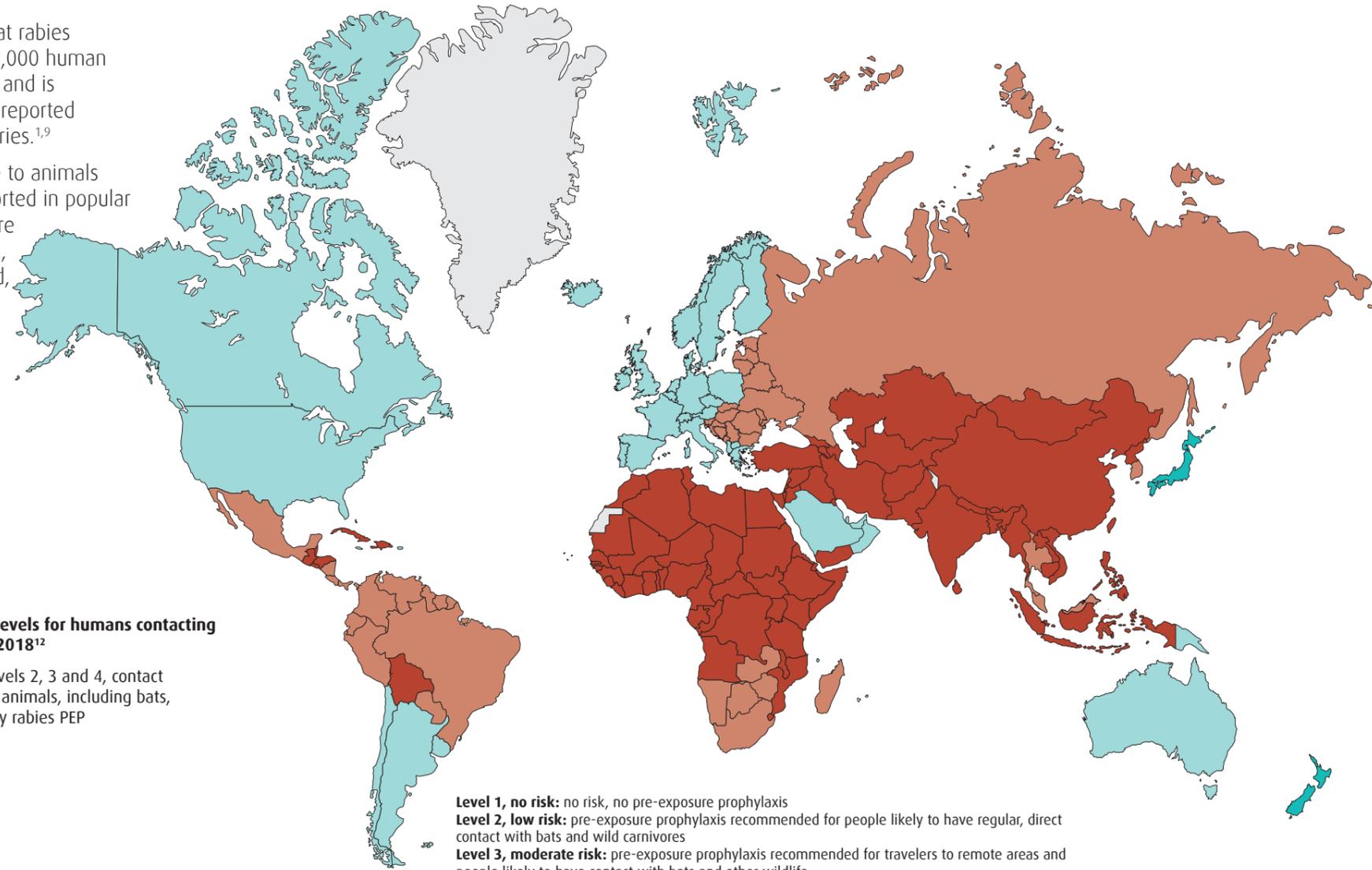
It is estimated that rabies causes around 59,000 human deaths each year and is notoriously under-reported in high-risk countries.^{1,9}

Traveler exposure to animals is frequently reported in popular destinations where rabies is endemic, including Thailand, Indonesia and Morocco.^{12,13}

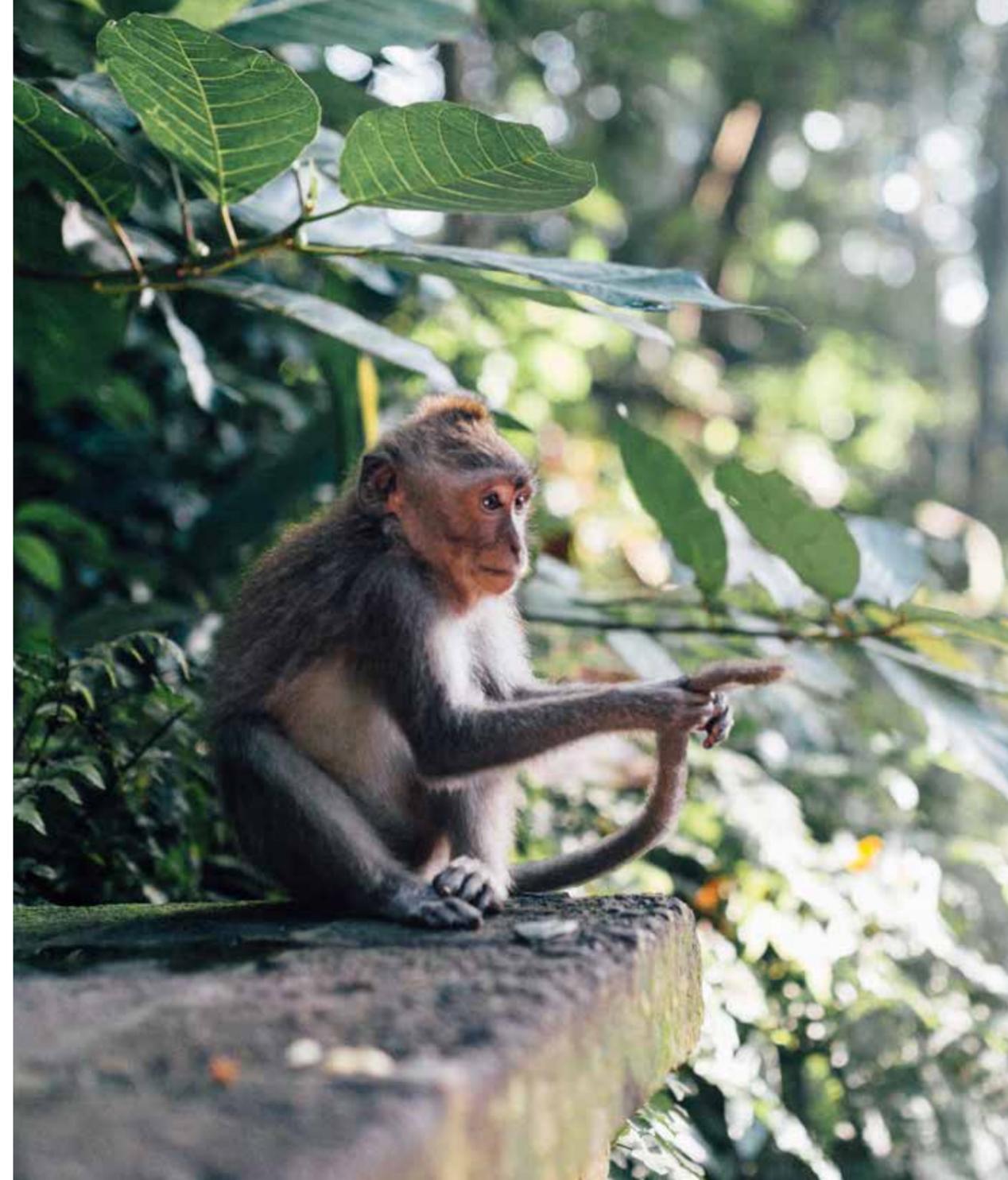
Distribution of risk levels for humans contacting rabies, worldwide, 2018¹²

In countries at risk levels 2, 3 and 4, contact with suspected rabid animals, including bats, should be followed by rabies PEP

- No risk
- Low risk
- Moderate risk
- High risk
- Not applicable/no data



Level 1, no risk: no risk, no pre-exposure prophylaxis
Level 2, low risk: pre-exposure prophylaxis recommended for people likely to have regular, direct contact with bats and wild carnivores
Level 3, moderate risk: pre-exposure prophylaxis recommended for travelers to remote areas and people likely to have contact with bats and other wildlife
Level 4, high risk: pre-exposure prophylaxis recommended for travelers and people with occupational risks likely to have contact with rabid domestic animals, particularly dogs, bats and wild carnivores

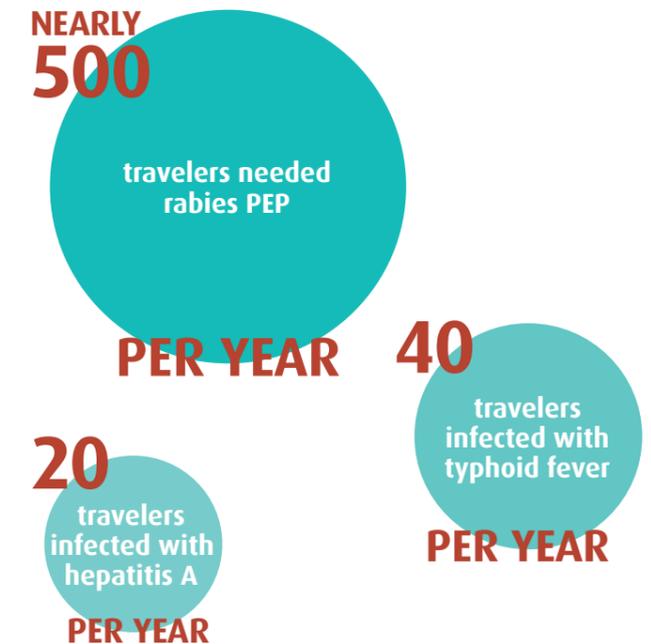


RISK OF RABIES EXPOSURE TO TRAVELERS MAY BE HIGHER THAN EXPECTED

The risk of rabies to travelers is difficult to estimate, but potential rabies exposure is likely one of the most frequent health threats to international travelers.²

In a global survey of travel clinics, nearly 500 travelers per year needed rabies PEP between the years 2007 and 2018.^{2,16} Potential rabies exposure was more common during that period than infection with either hepatitis A or typhoid fever, which affected 20 and 40 travelers per year, respectively.^{2,16}

Potential rabies exposure among travelers was more common than infection with hepatitis A or typhoid fever in a global survey of travel clinics (2007–2018).^{2,16}



RABID ANIMALS MAY NOT LOOK SICK AND MAY ACT IN SURPRISING, UNPREDICTABLE WAYS^{5,6}

- Avoiding contact with mammals and not provoking them is an important piece of pre-travel advice. However, it is also important for travelers to be aware that it has been reported that among potential rabies exposures in travelers, almost a third of animal contact is unprovoked¹⁴
- Animals with rabies can seem entirely normal, or they may behave in an uncharacteristic way.^{5,6} Signs for travelers to take notice of include:^{17,18}
 - General sickness
 - Problems swallowing
 - Lots of drool or saliva
 - An animal that bites at everything
 - An animal that appears tamer than expected
 - An animal that is having trouble moving or may even be paralyzed
 - A bat that is on the ground
- Children are especially at risk as they are more likely to spontaneously interact with animals, less likely to report a bite or scratch, and more likely to be bitten on the head and shoulders, meaning there is less time for treatment before the virus reaches the nervous system^{5,8}



Receiving PEP¹⁴

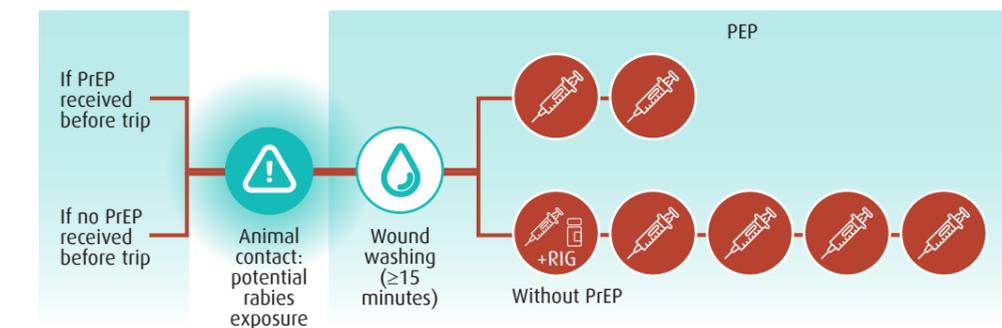
Of 42 study subjects with detailed information about potential rabies exposure

- 8 (19.0%) sought professional healthcare
 - 4 (9.5%) received PEP
 - 3 (7%) received it correctly

PRE-EXPOSURE PROPHYLAXIS CAN GIVE GREATER PEACE OF MIND

- For travelers to high-risk countries, PrEP gives psychological reassurance in the case of an animal bite or contact, and partial physiological protection in case of unrecognized exposure or delayed PEP administration¹³
- It is also important for travelers to know what immediate actions to take in case of potential exposure, and what they need by way of PEP depending on whether they have had PrEP. It has been reported that most travelers who are bitten by an animal do not clean their wounds properly, and among the few who seek professional healthcare, only a small number receive PEP according to World Health Organization (WHO) recommendations^{13,14}
- Availability of vaccines and rabies immunoglobulin in high-risk countries is limited, and the appropriate compliance to guidelines is low¹⁹
- PrEP before traveling simplifies the PEP vaccination schedule in case of exposure and eliminates the need for rabies immunoglobulin treatment, which may not be available in high-risk countries^{4,5,16,20,21}

EDUCATING TRAVELERS ON APPROPRIATE POST-EXPOSURE ACTIONS^{1,9-11}



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