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Rabies: 100% Fatal, 100% Preventable

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Rabies is a viral zoonosis of the central nervous system that is almost invariably fatal once clinical signs appear, yet it is entirely preventable. Dogs cause about 99 per cent of human cases, and India carries a large share of the global burden, which is estimated at tens of thousands of deaths a year, mostly among children in rural areas. Control rests on three pillars: mass vaccination of dogs to at least 70 per cent coverage, prompt and correct post-exposure prophylaxis (wound washing, vaccine and, for severe exposures, immunoglobulin), and public awareness backed by sound surveillance. Livestock owners and veterinarians face particular risks through contact with infected cattle, buffalo and dogs, and need pre-exposure vaccination and safe handling practices. This article sets out, in simple language, what each group can do to protect themselves, their animals and their communities, in line with the global goal of ending dog-mediated human rabies deaths by 2030.

Keywords: Rabies, Dog vaccination, Post-exposure prophylaxis, One Health, Livestock, zoonosis

Why rabies still matters

Rabies is caused by a lyssavirus that travels along nerves from the site of a bite to the brain. Once signs begin, the disease is almost always fatal in both animals and people. Despite this, it remains a disease of poverty. Global estimates put human deaths from dog-mediated rabies at roughly 59,000 a year, with the heaviest toll in Asia and Africa (Hampson et al., 2015). India alone has been estimated to account for a large proportion of these deaths, and a national survey suggested around 20,000 annually, with children under 15 years making up a large share of victims (Sudarshan et al., 2007). The tragedy is that every one of these deaths can be avoided. Effective vaccines for animals and people, and a proven treatment after exposure, have existed for decades. What is missing in many places is access, awareness and coordination between the health and veterinary sectors, which is why rabies is a classic One Health problem.

How the virus spreads and what to look for

The virus lives in the saliva of an infected animal and enters through a bite, or through a scratch or lick over broken skin or mucous membranes. Dogs are the main source for humans, but cats, cattle, buffalo, goats, jackals, mongooses and bats can also transmit it. An infected dog can shed virus in its saliva for a few days before it looks ill. The incubation period usually lasts one to three months, but it can range from days to more than a year, depending on the bite site and the amount of virus (Rupprecht et al., 2002).

In dogs and cats the disease appears in two forms. In the furious form the animal becomes irritable, aggressive, restless and bites at objects, may roam far and show a change of voice. In the dumb (paralytic) form there is drooling, a dropped jaw, difficulty swallowing and progressive paralysis. Death usually follows within about a week.

In cattle and buffalo signs include bellowing, drooling, loss of appetite, a staggering gait, aggression or, commonly, dull paralytic disease. Farmers often mistake the animal for having something stuck in the throat, put their hands in the mouth, and are exposed to the virus without realising it (Radostits et al., 2007). Any animal showing sudden behavioural change, drooling and paralysis should be treated as a possible rabies case until proven otherwise.

Remember

There is no cure once signs appear, but there is a very effective way to stop the disease in a person who has been exposed: act within hours. Delay is the biggest risk.

What each group can do

PET OWNERS	FARMERS	VETERINARIANS
■ Vaccinate dogs and cats; keep the certificate ■ Never ignore a bite or scratch, even from a "friendly" pet ■ Wash wounds at once and go to a doctor ■ Do not abandon or free-roam your pets ■ Report strange behaviour in animals	■ Vaccinate livestock in rabies-prone areas ■ Wear gloves when treating drooling or choking animals ■ Do not put bare hands in a cattle mouth ■ Boil milk from a suspect animal; do not eat its meat ■ Report suspected cases to the veterinary officer	■ Get pre-exposure vaccination and check titres ■ Use gloves, mask and eye protection ■ Confirm cases in a laboratory ■ Lead mass dog vaccination and ABC drives ■ Educate owners and notify authorities

For pet owners: vaccinate and be responsible

- **Vaccinate on schedule.** Puppies and kittens receive their first rabies vaccine at about three months, followed by a booster and then boosters as advised by the veterinarian and the vaccine label. Keep the vaccination card safe.
- **Do not let pets roam.** A leash, a fenced compound and a collar with identification reduce fights with stray dogs and wildlife.
- **After any bite, do not wait.** Even a vaccinated pet may bite, and an unvaccinated pet cannot be trusted. Treat every bite on its own merits and visit a doctor.
- **If your pet is bitten by a stray or wild animal,** consult your veterinarian the same day for a booster, and keep the pet away from other animals as advised.
- **Adopt responsibly.** Do not abandon pets; abandoned animals add to the stray population and the risk of transmission.

What to do after a bite or scratch

The first minutes matter. Prompt wound care itself removes much of the virus, and the course of vaccine that follows teaches the body to fight what remains (WHO, 2018a).

1. **Wash immediately** with running water and soap for at least 15 minutes. Use a detergent or povidone-iodine if available. Do not scrub hard, and do not apply chilli, turmeric, oil or other home remedies.
2. **Do not suture or tightly bandage** the wound unless a doctor advises it.
3. **Go to the nearest hospital the same day** and tell the doctor what animal was involved, whether it was vaccinated and how it behaved.
4. **Complete the full vaccine course** on the recommended days. Missing doses reduces protection.
5. **Observe the animal,** if it is a healthy dog or cat, for 10 days. Vaccination should still begin straight away and can be stopped if the animal stays healthy for the whole period.

Category	Type of contact with a suspect animal	What to do
I	Touching or feeding the animal; licks on intact skin	Wash the skin; no vaccine needed if history is reliable
II	Nibbling of uncovered skin; minor scratches without bleeding	Wash the wound; start rabies vaccine immediately
III	One or more bites or scratches that break the skin; licks on broken skin or mucous membranes; contact with bats	Wash the wound; vaccine plus rabies immunoglobulin infiltrated in and around the wound

Adapted from the WHO classification of exposure. Treatment decisions are made by the doctor; schedules (intradermal or intramuscular) follow national guidelines.

For farmers: protect the herd and yourself

Rabies in cattle and buffalo is a dead end for the animal but a danger for the people around it. Farmers in areas where rabies is common should vaccinate valuable livestock, keep stray dogs away from sheds and fodder stores, and call a veterinarian early if any animal develops sudden changes in behaviour.

- **Never put a bare hand into the mouth** of an animal that is drooling, choking or unable to swallow. Use gloves and a mouth gag, or call the veterinarian.
- **Wash and report any exposure.** If saliva touches a cut or the eyes, mouth or nose, wash and seek medical care as for a bite.
- **Isolate the suspect animal** in a secure place, restrict visitors and do not slaughter it for meat or sell it.
- **Boil milk** from any animal suspected of rabies, and avoid contact with its saliva. Do not consume its meat.
- **Dispose of carcasses safely** by deep burial or as guided by the veterinarian, never by skinning or feeding to dogs.

For veterinarians: the front line

Veterinarians stand at the centre of rabies control. They handle the animals most likely to be infected and they lead the programmes that stop the virus at its source.

- **Protect yourself.** Veterinarians, para-veterinary staff and animal handlers should receive pre-exposure vaccination, which the WHO now allows as a short course on two visits, and check antibody levels if working in high-risk settings (WHO, 2018a).
- **Use protective equipment** for any case of neurological disease in animals, especially necropsy and handling of the head and brain.
- **Confirm the diagnosis.** Laboratory confirmation by the fluorescent antibody test on brain tissue, supported by RT-PCR, is the standard approach (WOAH). Behaviour alone is not enough.
- **Advise and document.** Counsel owners after any bite incident, issue vaccination certificates and report suspected cases to the animal health and public health authorities.
- **Lead dog programmes.** Support mass vaccination and sterilisation under the Animal Birth Control programme, because vaccinated dogs form a living barrier between the virus and people.

Controlling rabies in the community

Studies in several countries have shown that when about 70 per cent of dogs in a community are vaccinated, transmission falls to a level that can no longer sustain an outbreak (Coleman and Dye, 1996). Campaigns in Africa and Asia have shown that this is achievable even in poor, rural settings, provided the vaccination is repeated every year because dog populations turn over quickly (Lembo et al., 2010). Global agencies have set the target of ending dog-mediated human rabies deaths by 2030 (Minghui et al., 2018), and India has adopted a national action plan for the same goal, built on dog vaccination, improved access to post-exposure treatment, surveillance and awareness (NCDC and DAHD, 2021).

The Winning Formula

- Vaccinate at least 70% of dogs, every year.
 - Treat every bite as an emergency: wash, vaccinate, and get immunoglobulin for severe exposures.
 - Teach children and communities how to avoid bites and what to do after one.
- Share data between doctors, veterinarians and local bodies.

Conclusion

Rabies is one of the few diseases that is simple to prevent and impossible to cure. The tools are in our hands: vaccinated dogs, careful handling of sick animals, immediate wound care and a full course of treatment for anyone exposed. Pet owners, farmers and veterinarians each hold one part of the chain, and when all three act together, the virus has nowhere to go. Every vaccinated dog and every bite treated on time is a life protected.

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