Rapid Response to Rabid and Suspect Rabid Dog Alerts

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Key points
• Positive rabies cases alert that the area needs to be revaccinated (assuming that vaccination has previously been conducted) and monitored.
• Highly suspect dogs should be humanely euthanized immediately and the head sent to a competent laboratory for diagnosis.
• Suspect rabid dogs should be quarantined whenever possible for observation, but humanely euthanized in any case where rabies symptoms further develop.
• If quarantine is not possible, the dog must be euthanized.

Risks and precautions
• All persons dealing with suspect rabies cases or entering a field situation where there may be rabid animals should have received the full course of pre-exposure rabies vaccination.
• Anyone bitten or scratched should wash the wound immediately under running water for 15 minutes with soap, then disinfect with ethanol (700ml/1l) or iodine (tincture or aqueous solution) if available, and immediately go to the nearest approved hospital or bite treatment centre for an assessment of whether postexposure rabies vaccination is needed - this includes staff that have been previously vaccinated. There must be a follow-up system to ensure that all postexposure vaccinations are received.

Related guides
Euthanasia of Rabid and Suspect Rabid Dogs
Dog Capture and Handling
Vaccination Day
Vaccine Storage, Transport and Management

Weblinks
World Health Organization (WHO). 'Current strategies for human rabies pre and post-exposure prophylaxis'
1. Introduction

It is vital to the success of the Mass Dog Vaccination (MDV) program, and all rabies control efforts, that rabies suspect cases are correctly recognised and that euthanasia is carried out when necessary to prevent further suffering for the dog and to minimise risk to humans and the rest of the dog population. In addition, any animals that this suspect or primary case has bitten or nursed and thus that are likely to be infected must also be carefully managed. These animals would be considered possible secondary cases. In fact, not all secondary cases are immediately identified and any animal in the vicinity of the suspect rabid dog is at possible risk.

Rapid report and removal of a suspect and clinical rabies case is crucial to reducing the spread of rabies and impact on the community.

Positive rabies cases alert that the area needs to be re-vaccinated (assuming that vaccination has previously been conducted) and monitored.

Any suspect rabid dog must be investigated and assessed to avoid the possibility that a rabid dog remains or rejoins the community. This suspect may be identified, during a planned MDV program when dogs are being captured or brought in by their owners / carers, through a report by a member of the community outside of a program, or during a follow up on a bite-case report from the human health sector. In the latter cases, a Rapid Response Team will be required for the followup.

Refer to the guide Euthanasia of Rabid & Highly Suspect Rabid Dogs for euthanasia procedures and management of controlled drugs. Refer also to The Merck Veterinary Manual (Merck & Co. Inc.) for more veterinary details if needed.

2. Personnel and equipment

Rapid response team
A Rapid Response Team is required to respond to any reports of suspect rabid dogs in the community. Initial assessment and reporting will determine the level of risk and hence response required in the field, and alert the closest bite treatment clinic.

This team should ideally consist of at least 2 competent catchers and 1 veterinarian.

Material & equipment
- Access to doublewalled isolation cages
- Vaccine and vaccination materials
- Dog catching and restraint equipment, plus spare netting
- Euthanasia kit
- Cold box and cool bricks for vaccine
- First aid kit, plus human vaccines
- Information, Education and Communication (IEC) materials
Protective clothing

All operators handling suspect rabid dogs must:

• cover all exposed skin, with a minimum of closed shoes, long pants and shirt to minimise the chance of injury from a random dog bite
• wear eye goggles or a face shield (to prevent dog saliva being sprayed into the human eye)
• wear robust gloves (full length where needed to cover skin) of a material that cannot be readily pierced by the teeth of a dog [e.g. leather, synthetic material or thick cloth]
  • Gloves can make handling difficult, but once an animal is sedated or anaesthetised double layered, thinner, disposable gloves can be used.

Any person with wounds on their hands or arms should not handle any dogs. (Note: Animals infected with rabies can shed virus in their saliva for several days before the onset of clinical signs.)

3. About rabies

Progression of the rabies disease

The clinical course of the disease in dogs is usually 10 days long during which time the animal is highly infective to others with the rabies virus present in the saliva. (Some animals will shed the virus in the saliva before rabies is identified).

The clinical signs may progress through the following stages (Adapted from The Merck Manual, Merck & Co. Inc.) though some animals die rapidly without marked clinical signs:

• **Initial signs are non-specific** – Fever, malaise, apparent headache

• **Within days** – Encephalitis [furious rabies; in ~ 80%] or paralysis [dumb rabies; in ~ 20%] develops:
  • Encephalitis causes biting at random, restlessness, confusion, agitation, bizarre and hyperactive behaviour, hallucinations, and insomnia. Salivation is excessive, and attempts to drink cause painful spasms of the laryngeal and pharyngeal muscles (often conveyed indirectly as ‘hydrophobia’).
  • In the paralytic form, depression and ascending paralysis (rear end paralysis progressing to full quadriplegia) develop without delirium and hydrophobia.

• **Finally** – Either rapid death or general paralysis, difficulty in swallowing and excessive salivation then death occur.

Rabies risk to other animals and people

During this important 10 days, a rabid dog poses a very high risk to other animals and people.

**Incubation period:** The time between exposure and the appearance of clinical signs in dogs varies from a few days to 6 months. Dogs cannot transmit rabies during the incubation period and generally behave normally. This is crucial knowledge for cases when an animal may have been bitten by the suspect case. **Note** - If dogs are incubating the virus when vaccinated or they are bitten by a rabid dog when the vaccine has not taken full effect, they can still incubate and develop clinical rabies in due course.
Using clinical signs to identify clinically rabid dogs

**Clinical signs of rabies include (1 or more of the following):**
- Biting other animals, humans or objects
- Abnormal behaviour (such as not responding to the owner, being scared)
- Abnormal vocalisations
- Chewing objects other than food
- Hypersalivation
- Wandering aimlessly
- Hypersexuality
- Abnormal licking of water / urine
- ‘Fly biting’ (where the dog appears to be biting imaginary flies)
- Choking sounds (the dog appears to have something stuck in its throat) or regurgitation
- Drooping jaw
- Aggression
- Incoordination / imbalance / stiffness when moving
- Paralysis, including limping due to leg paralysis
- Convulsions
- Death

[Source: Adapted from the FAO 'Integrated Bite Case Management'; Tepsumethanon, Wilde & Meslin, 2005]

*Stray dogs: Not a criterion for rabies suspects!*  
Stray dogs (dogs that have no obvious owner or carer) should not be assumed as rabies threats. If they are properly vaccinated they will help build a stable resistance barrier to protect the community from rabies.
4. Response to reported suspect rabid dogs

Steps

1. Receiving reports of a suspect rabid animal
Reports of suspect rabid dogs can come to the local authority in a number of ways, such as directly from a community member or leader, a government department, the bite victim, veterinarian, doctor, or person observing the dog if already isolated or quarantined.

1.1 Collect a careful history and observational record on the dog
The following information (where applicable) should be collected:
- Date of incident
- Location(s) of suspect animal
- Signs observed in the biting animal
- Location, names and phone number of any people bitten, including nature of bite/contact, where they were bitten on the body
- Number and location of any other animals bitten (if known)
- Name and phone number of person giving the report
- Name and phone number of owner of suspect animal(s) or a community person in the vicinity where the dog seen (if a community dog).

1.2 Advice for any human bite victim(s):
The bite victim (Category II or III, WHO Rabies Fact Sheet) must immediately wash the wound under running water for 15 minutes with soap, then disinfect with ethanol (700ml/l) or iodine (tincture or aqueous solution) if readily available, and go to the nearest approved hospital or bite treatment centre to be assessed for post-exposure rabies vaccination and wound treatment. There must be a follow-up system to ensure that all post-exposure vaccinations are received.

2. Identify rabies suspects

2.1 For biting dogs: Use the provided decision trees (Figures A-D) to identify suspect and highly suspect rabid dogs and appropriate action (see Scenario 1 for when a human is bitten; Scenario 2 for when a dog is bitten).

For other clinical criteria for identifying rabies suspects and recommended responses refer to the Annex ‘Six clinical criteria for rabies diagnosis’ (Tepsumethanon, Wilde & Meslin, 2005).

2.2 Dog acting strangely but not biting: Visit within 1 day and gain full history. Use clinical signs of rabies to identify level of risk.

3. ACTION for suspect rabid dogs
See Figures A, B, C (Scenario 1) and Figure D (Scenario 2) for appropriate decision making and action.

In summary:
A highly suspect rabid dog is one that:
- shows more than one sign of rabies
- has bitten multiple persons or animals in a short time
- is the puppy of a rabid mother
- is found dead

A suspect rabid dog only shows one sign.
3.1 For rabies suspects

**Highly suspect rabid dogs:**
Should be immediately humanely euthanized and the head sent to a competent laboratory for diagnosis.

**Suspect rabid dogs:**
Quarantine and observe for 10 days.
- If symptoms develop / further progress – **Euthanize** (see Guide Euthanasia of Rabid or Highly Suspect Rabid Dogs).
- If symptoms don’t progress and the dog is still alive after 10 days, the dog is rabies free – vaccinate and release.

Notes:
- If quarantine at an official facility (such as a Municipal Pound), or restraining and isolating (such as caging) by the owner, is not possible then euthanasia must be performed.
- It is possible for vaccinated dogs to develop a mild form of rabies if they were incubating the disease at the time of vaccination or if they did not mount an appropriate immune response. Hence, vaccinated dogs showing signs of rabies should be euthanized.

If in any doubt, confer with an experienced colleague or hold the animal in quarantine for 10 days.

3.2 For secondary cases (dogs that have been in contact with a rabies suspect and hence are at risk of developing rabies):

3.2.1 Dogs bitten by a suspect rabid dog: See Scenario 2.

3.2.2 Puppies of a suspect rabid dog
All puppies of a rabies suspect mother should be regarded as a rabies suspect and quarantined and observed for 6 months. If quarantine is not available, the puppies must be euthanized.

3.2.3 Puppies of a confirmed rabid dog
All puppies of a confirmed rabid dog must be euthanized.

3.2.4 Puppies bitten by a suspect rabid dog
If puppies between 1 and 3 months have had only one or no vaccination and have been bitten by a suspect rabid dog, they are still at risk of developing rabies and should be euthanized (if quarantine is not possible).

4. Laboratory confirmation
The head of any euthanized suspect rabid dog must be sent for laboratory diagnosis to confirm clinical cases and ensure accurate national notification *. The **fluorescent antobody test (FAT)** is highly recommended (OIE, 2013).

* If this is a first or new rabies case in an area previously free of rabies for some period, then immediate notification to the relevant authorities is important upon urgent confirmation of the case. They will then decide what vaccination of dogs is required. See GARC Rabies Blueprint: Contingency Planning.

5. Reporting
Fill in a Rabies Rapid Response and Sample Submission Form, and a surveillance form including the GPS coordinates of the outbreak. Send the report to the local authority.
Scenario 1: Human bitten by a dog or exposed (primary dog cases)

Figure A

HUMAN BITTEN OR EXPOSED

Bite Victim Action:
- Wash wound
- Start VAR (for WHO category II & II bites) & continue until notified of rabies status of dog
- Notify human health clinic

Gather dog information / history

Call Rapid Response Team

Visit location of suspect dog (immediately for urgent cases)

Biting dog not found

Inform human health clinic / practitioner. For safety, assume dog is rabid.

Bite victim to continue VAR

Biting dog found

Dog had no unusual behavior except the one bite

SUSPECT RABID DOG (Go to Figure C)

Biting animal:
- Has more than 1 other sign of rabies, or
- Has bitten more than once, or
- Is found dead, or
- Is a puppy of a rabies positive mot...

HIGHLY SUSPECT RABID DOG (Go to Figure B)
Figure B: Highly suspect rabid dog

- **HIGHLY SUSPECT RABID DOG**

  - Dog is dead
  - Humanely euthanize (immediately)
  - Submit head for testing
  - Notify health clinic that dog is high suspect & they will be notified of test results. Continue VAR

  - **FAT positive**
    - Notify clinic to complete full VAR
    - Emergency dog vaccination of area

  - **FAT negative**
    - Notify clinic to stop VAR

- **Note:** Observe area closely if unvaccinated, usually rabies-free or >1 suspect cases reported.

Figure C: Suspect rabid dog

- **SUSPECT RABID DOG**

  - **VACCINATED**
    - Owner to observe dog (quarantine if no owner) for 10 days
    - Victim to continue VAR

    - Dog dead after 10 days
    - HIGHLY SUSPECT RABID DOG (Go to Figure B)

    - Dog alive - NO RABIES
      - Re-vaccinate dog
      - Victim to stop VAR

  - **UNVACCINATED**
    - Visit within 1-3 days.
    - Victim to continue VAR

    - No signs of rabies
      - One or more signs of rabies
        - Vaccinate dog
          - Owner to observe for next 10 days then report back
          - HIGHLY SUSPECT RABID DOG (Go to Figure B)

        - No signs after 10 days, stop VAR

Guidelines for Mass Dog Vaccination: Rapid Response
Scenario 2: Dog bitten by a suspect rabid dog, or puppies of a suspect rabid dog (secondary cases)

Figure D

5. Emergency vaccinations

Emergency vaccinations must be conducted at the area/village where a positive case is found. This should be done as the result of the integrated investigation between animal health and public health. Emergency vaccination should be carried out within 24 hours after a positive case is reported to minimise the spread of the disease to other dogs.
Additional resources


References


Annex: Six clinical criteria for rabies diagnosis

[Tepsumethanon, Wilde & Meslin, 2005]

1) Age of the dog?
   a) Less than 1 month ———> not rabies
   b) One month or more or not known ———> go to 2)

2) State of health of the dog?
   a) Normal (not sick) or sick more than 10 days ———> not rabies
   b) Sick less than 10 days or not known ———> go to 3)

3) How did the illness evolve?
   a) Acute onset from normal health ———> not rabies
   b) Gradual onset or not known ———> go to 4)

4) How was the condition during the clinical course in last 3-5 days?
   a) Stable or improving (with no treatment) ———> not rabies
   b) Symptoms and signs progressing or not known ———> go to 5)

5) Does the dog show the sign of “Circling”? (It stumbles or walks in a circle and hits its head against the wall as if blind.)
   a) Yes ———> not rabies
   b) No or not known ———> go to 6)

6) Does this dog show at least 2 of the 17 following signs or symptoms during the last week of life?
   a) Yes ———> Rabies
   b) No or showing only 1 sign ———> Not rabies

1. Drooping jaw
2. Abnormal sound in barking
3. Dry drooping tongue
4. Licking its own urine
5. Abnormal licking of water
6. Regurgitation
7. Altered behavior
8. Biting and eating abnormal objects
9. Aggression
10. Biting with no provocation
11. Running without apparent reason
12. Stiffness upon running or walking
13. Restlessness
14. Bites during quarantine
15. Appearing sleepy
16. Imbalance of gait
17. Frequent demonstration of the “Dog sitting” position.