

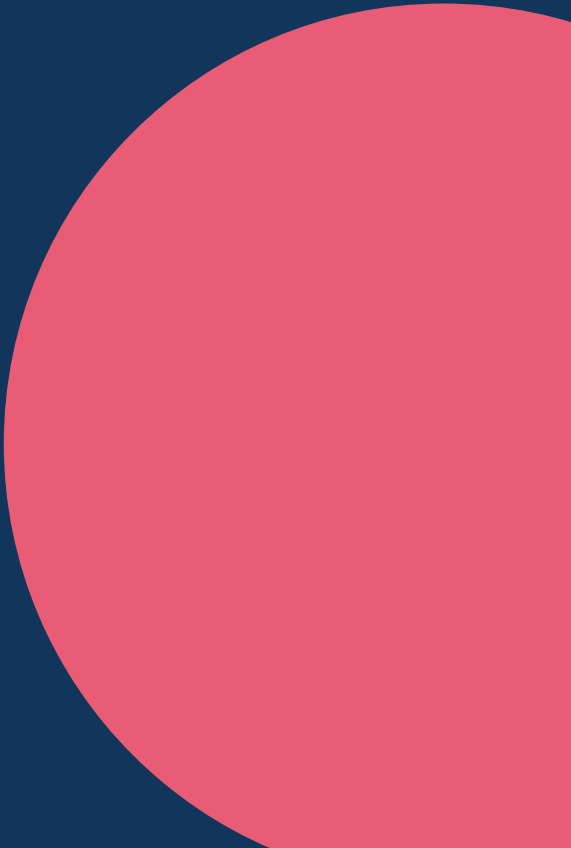


# Rabies Notes

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Animal bite wounds • Rabies PEP • Vaccines • RIG • Prevention



# 1. Classification of Animal Bite Wounds

## QUESTION

Classify dog bite / animal bite wounds according to exposure category. Add a note on first aid and local wound care of bite wound / scratch site.

## ANSWER

### Classification of Animal Bite Wounds (Exposure Categories)

The categories of contact with a **suspect rabid animal** and their recommended **Post-Exposure Prophylaxis (PEP)** are classified as follows:

#### Category I

- **Type of Contact:** Touching or feeding animals, licks on intact skin; contact of intact skin with animal secretions.
- **Recommended PEP:** None, except for local wound toilet (ensure that the history is reliable).

#### Category II

- **Type of Contact:** Nibbling of uncovered skin, minor scratches, or abrasions without bleeding.
- **Recommended PEP:** Immediate **active immunization** with **anti-rabies vaccine** and **local treatment of the wound**.

#### Category III

- **Type of Contact:** Single or multiple transdermal bites or scratches, licks on broken skin; contamination of mucous membranes with saliva from licks; and all contacts with bats.
- **Recommended PEP:** Immediate **active immunization** with **anti-rabies vaccine** and administration of **rabies immunoglobulin**, along with **local treatment of the wound**.

### First Aid and Local Wound Care

Prompt and adequate **local treatment of the wound** is the first requisite and is of utmost importance. It aims to remove as much **virus** as possible from the site of inoculation before it can be absorbed by the **nerve endings**. It is of maximal value when applied immediately after exposure (within minutes) but should not be neglected even if several hours or days have elapsed.

The **Local Treatment** comprises the following field procedures:

#### 1. Cleansing (First-Aid)

- Immediate flushing and washing of the **wound(s), scratches, and adjoining areas** with plenty of **soap and water**, preferably under a running tap, for at least **15 minutes** is of paramount importance in the **prevention** of human rabies.
- If **soap** is not available, simple flushing of the wounds with plenty of water should be done as **first-aid**.
- In the case of **punctured wounds**, catheters should be used to irrigate the deeper parts of the wounds.

## 2. Chemical Treatment

- Whatever residual **virus** remains in the wound(s) after cleansing should be inactivated by irrigation with **virucidal agents**.
- Recommended agents include **alcohol** (400-700 ml/litre or 70% ethyl or isopropyl alcohol), tincture, **0.01% aqueous solution of iodine**, or **povidone iodine**.

## 3. Suturing

- Bite wounds should not be immediately sutured to prevent additional trauma, which may help spread the **virus** into deeper tissues.
- If **suturing** is absolutely necessary, it should be done **24-48 hours later**, applying the minimum possible loose stitches, under the cover of **rabies immunoglobulin** applied locally.

## 4. Antibiotics and Anti-tetanus Measures

- The application of appropriate **antibiotics** (like broad-spectrum amoxicillin-clavulanate) to prevent secondary bacterial infections.
- **Anti-tetanus procedures** (e.g., administering a tetanus booster if the vaccination status is unknown or the patient has not received one in the last 5 years) should follow the local treatment recommended above.

## 2. Multiple Bleeding Dog Bite Wounds

### QUESTION

**A patient presents with multiple bleeding dog bite wounds. What history will you take? How will you manage the case?**

### ANSWER

#### History Taking

For a patient presenting with **dog bite wounds**, the following relevant **epidemiological and clinical history** must be elicited:

- **Time of bite:** To determine the interval between exposure and presentation.
- **Type of animal:** To identify if the animal is a known rabies reservoir or vector species.
- **Nature of bite:** To assess the severity, number of wounds, and body parts involved.
- **Provoked / Unprovoked bite:** Unprovoked bites carry a higher suspicion of rabid behavior.
- **Traceability of the animal:** To determine if the dog can be observed for 10 days or investigated.
- **Immunization status of the patient:** To check for prior pre-exposure or post-exposure prophylaxis and tetanus vaccination status.

#### Exposure Category

Multiple bleeding dog bite wounds constitute a **Category III** animal bite exposure (defined as single or multiple transdermal bites or scratches, licks on broken skin, or contamination of mucous membranes with saliva).

#### Management of Category III Dog Bite

Every instance of human exposure should be treated as a **medical emergency**. The management comprises **immediate local wound care**, **passive immunization**, **active immunization**, and **observation of the animal**.

##### 1. Local Treatment of the Wound (First-Aid & Chemical Treatment)

Prompt and adequate **local treatment** is of utmost importance to remove as much **virus** as possible from the site of inoculation before it can be absorbed by the **nerve endings**.

- **Cleansing:** Immediate flushing and washing of the wound(s) thoroughly with plenty of **soap and water** under a running tap for at least **15 minutes**.
- **Chemical Treatment:** Clean the wound with **virucidal agents** like **alcohol** (70% ethyl or isopropyl alcohol), **tincture iodine**, or **povidone iodine**. (Note: Antiseptics like savlon or cetavalon are no longer recommended).
- **Suturing:** Suturing of bite wounds should be avoided for at least **24 hours**. If suturing is absolutely unavoidable, it should be done **24-48 hours later**, applying the minimum possible loose stitches, strictly under the cover of **rabies immunoglobulin** applied locally.

##### 2. Passive Immunization (Rabies Immunoglobulin - RIG)

Administration of **RIG** is mandatory for all **Category III** exposures to provide immediate, short-term passive protection.

- **Dose: Human Rabies Immunoglobulin (HRIG)** is given at **20 IU/kg** body weight (maximum **1500 units**). **Equine Rabies Immunoglobulin (ERIG)** is given at **40 IU/kg** body weight (maximum **3000 units**).
- **Administration:** The entire unit, or "**as much as anatomically possible**" (avoiding compartment syndrome), should be infiltrated into and around the wound(s) only. If any **RIG** is left, it should be administered by deep **intramuscular (IM)** injection at a site far away from where the active **anti-rabies vaccine** is injected.

### 3. Active Immunization (Anti-Rabies Vaccine)

All animal bite victims of **Category III exposure** require a full course of **active immunization** using **Cell Culture Vaccines (CCVs)**.

- **Intramuscular (IM) Regimen (Essen regimen):** Five doses of **1 mL or 0.5 mL** each (as per manufacturer), given on **days 0, 3, 7, 14, and 28**.
  - **Site: Deltoid** muscle for adults; anterolateral aspect of the thigh for infants and young children. The **gluteal region** is strictly not recommended as fat retards antigen absorption.
- **Intradermal (ID) Regimen (Updated Thai Red Cross / 2-2-2-0-2 regimen):** Two-site ID injections of **0.1 mL** each, given on **days 0, 3, 7, and 28** (the day 14 dose is missed).
  - **Site: Deltoid** area.

### 4. Antibiotics and Anti-Tetanus Prophylaxis

- **Tetanus Prophylaxis:** Administer a **tetanus toxoid (TT/Td)** booster if the person's vaccination status is unknown or if they have not received a booster within the last 5 years.
- **Antibiotics:** Prescribe a **broad-spectrum antibiotic** (such as amoxicillin-clavulanate) to prevent secondary bacterial infections based on wound severity.

### 5. Observation of the Animal

- If the biting animal is a **domestic dog**, it should be observed for **10 days**.
- If the animal remains healthy after **10 days**, or is humanely killed and declared negative by a WHO-prescribed laboratory test, the **IM regimen** may be converted to **pre-exposure prophylaxis** by skipping the **day-14 dose** but continuing the **day-28 dose**.
- If the patient is receiving the **ID regimen**, the schedule should be completed regardless of the biting animal's status.

### 3. PEP for Category II and III Bites

#### QUESTION

Describe rabies post-exposure prophylaxis for Category II and Category III animal bites. Add the anti-rabies vaccine schedule and role of rabies immunoglobulin.

#### ANSWER

### Post-Exposure Prophylaxis (PEP) for Category II and Category III Bites

The aim of **post-exposure prophylaxis (PEP)** is to neutralize the inoculated **rabies virus** before it can enter the **nervous system**. Every instance of human exposure should be treated as a **medical emergency**.

#### Category II Exposure

- **Definition:** Nibbling of uncovered skin, minor scratches, or abrasions without bleeding.
- **Recommended PEP:** Immediate **active immunization** with **anti-rabies vaccine** and prompt **local treatment of the wound**.

#### Category III Exposure

- **Definition:** Single or multiple transdermal bites or scratches, licks on broken skin, contamination of mucous membranes with saliva from licks, and all contacts with bats.
- **Recommended PEP:** Immediate **active immunization** with **anti-rabies vaccine**, administration of **rabies immunoglobulin (RIG)**, and prompt **local treatment of the wound**.

### Components of Post-Exposure Prophylaxis

#### 1. Local Treatment of the Wound

Prompt and adequate **local treatment** is of maximal value when applied immediately after exposure (within minutes), though it should not be neglected even if several hours or days have elapsed.

- **Cleansing:** Immediate flushing and washing of the **wound(s), scratches, and adjoining areas** with plenty of **soap and water** under a running tap for at least **15 minutes**.
- **Chemical Treatment:** Residual **virus** should be inactivated by irrigation with **virucidal agents** such as **alcohol** (400-700 ml/litre or 70% ethyl/isopropyl alcohol), **tincture iodine**, or **0.01% aqueous solution of povidone-iodine**.
- **Suturing:** Immediate suturing is **contraindicated**. If absolutely necessary, it should be done **24-48 hours** later with minimum possible loose stitches, under the cover of **rabies immunoglobulin** applied locally.

#### 2. Anti-Rabies Vaccine Schedule (Active Immunization)

For both **Category II and III exposures**, a full course of **Cell Culture Vaccines (CCV)** or **Purified Duck Embryo Vaccine (PDEV)** is mandatory. The schedules include:

### Intramuscular (IM) Regimen (Essen Regimen)

- **Schedule:** Five doses administered on **days 0, 3, 7, 14, and 28**.
- **Dose:** **1.0 mL or 0.5 mL** (as per the manufacturer's instructions).
- **Site:** **Deltoid muscle** in adults; anterolateral part of the thigh in infants and young children. The **gluteal region** is strictly not recommended.

### Abbreviated Multisite IM Regimen (Zareb Regimen / 2-1-1)

- **Schedule:** Four doses administered on **days 0, 7, and 21**.
- **Dose:** Two doses on **Day 0** (one in each of the two deltoid or thigh sites), followed by one dose on **Day 7** and one dose on **Day 21**.

### Intradermal (ID) Regimen (Updated Thai Red Cross / 2-2-2-0-2 Regimen)

- **Schedule:** Administered on **days 0, 3, 7, and 28**. The **Day 14 dose** is missed.
- **Dose:** **0.1 mL** per site at **two sites** (deltoid or thigh) on each visit.

*Note: For **domestic dogs, cats, or ferrets**, if the animal is observed for **10 days** and remains healthy, the **IM regimen** can be converted to **pre-exposure prophylaxis** (skipping Day 14, taking Day 28), whereas the **ID regimen** must be completed regardless of animal status.*

## 3. Role of Rabies Immunoglobulin (Passive Immunization)

- **Role and Indication:** **Rabies Immunoglobulin (RIG)** is indicated to provide immediate, short-term **passive protection** by neutralizing the **virus** at the wound site before active antibodies are produced by the vaccine. It is mandatory for all **Category III** exposures and for immunocompromised individuals with Category II or III exposures.
- **Dosage:**
  - **Human Rabies Immunoglobulin (HRIG):** **20 IU/kg** body weight (Maximum **1500 IU**).
  - **Equine Rabies Immunoglobulin (ERIG):** **40 IU/kg** body weight (Maximum **3000 IU**).
- **Administration Guidelines:**
  - It should be administered only once, preferably at or as soon as possible after the initiation of the post-exposure vaccination (up to the **7th day** after the first vaccine dose).
  - The entire dose, or as much as anatomically possible (avoiding compartment syndrome), should be infiltrated **into and around the wound site(s)**.
  - If any **RIG** is left over, it should be injected via deep **intramuscular (IM)** route at a site distant from the vaccine administration site.

## 4. Rabies PEP Vaccination Regimens

### QUESTION

Write the vaccination regimens for post-exposure prophylaxis in rabies. Add a note on intradermal rabies vaccine schedule.

### ANSWER

## Vaccination Regimens for Post-Exposure Prophylaxis (PEP) in Rabies

All animal bite victims of **Category II** and **Category III** exposures require a full course of **active immunization**. The vaccines utilized are safe and effective **concentrated and purified cell-culture vaccines (CCVs)** or **embryonated egg-based vaccines (EEVs)**.

The vaccination regimens are administered via **Intramuscular (IM)** or **Intradermal (ID)** routes.

### 1. Intramuscular (IM) Regimens

- **Dose:** **1.0 mL** or **0.5 mL** per dose, depending on the manufacturer's instructions.
- **Site of Administration:** The **deltoid muscle** in adults, or the **anterolateral part of the thigh** in infants and young children. The **gluteal region** is not recommended because the fat present in this region retards the absorption of antigen and impairs optimal immune response.

The recommended **IM schedules** are:

- **Essen Regimen (5-Dose Schedule / 1-1-1-1-1):** One IM dose is given on each of **days 0, 3, 7, 14, and 28**.
- **Zagreb / Zareb Regimen (Abbreviated Multisite IM Regimen / 2-1-1):** A 4-dose regimen where **two doses** are given on **day 0** (one in each of the two deltoid or thigh sites), followed by **one dose on day 7**, and **one dose on day 21**.

### 2. Intradermal (ID) Regimens

#### Updated Thai Red Cross Regimen (2-2-2-0-2)

- **Schedule:** Administered on **days 0, 3, 7, and 28**. The **day 14 dose is missed**.
- **Dose:** **0.1 mL** per site.
- **Site:** Administered at **two sites** (**deltoid** or **thigh**) during each visit.

### Note on Intradermal Rabies Vaccine Schedule

- **Vaccine Type:** Only **cell culture vaccines (CCVs)** are recommended for intradermal schedules.
- **Field Procedure:** The vaccine must be injected **intradermally** to produce a classical **bleb**. If the vaccine is inadvertently injected too deeply into the skin (**subcutaneous**) and the classical bleb is not seen, the needle must be withdrawn and another **ID dose** should be given at an adjacent site.
- **Contraindications for ID Route:** **Immunocompromised individuals**, those receiving **immunosuppressive therapy**, and people taking **chloroquine** for malaria treatment or prophylaxis

may have a reduced immune response to intradermal rabies vaccination. These patients must receive the rabies vaccine exclusively via the **intramuscular (IM)** route.

- **Interchangeability of Routes:** Shifting from the **IM** to the **ID** route, or vice versa, during the course of **post-exposure prophylaxis** is not recommended, as there is insufficient scientific evidence regarding vaccine immunogenicity when the route of administration is altered during PEP.

## 5. Rabies Immunoglobulin in Animal Bite

### QUESTION

Mention the indications, dose and method of administration of rabies immunoglobulin in animal bite. Calculate the dose of ERIG for a given body weight.

### ANSWER

#### Indications of Rabies Immunoglobulin (RIG)

The administration of **Rabies Immunoglobulin (RIG)** for **passive immunization** is indicated in the following situations to neutralize the inoculated **virus** before it can enter the **nervous system**:

- **Category III Exposures:** Single or multiple transdermal bites or scratches, licks on broken skin, contamination of mucous membranes with saliva from licks, and all contacts with bats.
- **Immunocompromised Individuals:** Patients with immunocompromising conditions, including people with **HIV/AIDS**, who sustain either **Category II** or **Category III** exposures,,.

#### Dose of Rabies Immunoglobulin

- **Human Rabies Immunoglobulin (HRIG):** 20 IU/kg body weight, subject to a maximum of 1500 IU,,.
- **Equine Rabies Immunoglobulin (ERIG) / F(ab')<sub>2</sub> products:** 40 IU/kg body weight, subject to a maximum of 3000 IU,,.

#### Method of Administration

- **Timing:** Rabies immunoglobulin should be administered only once, preferably at, or as soon as possible after, the initiation of **post-exposure vaccination**,. Beyond the **seventh day** after the first vaccine dose, **RIG** is not indicated because an active antibody response to the vaccine is presumed to have occurred,,.
- **Local Infiltration:** All of the **rabies immunoglobulin**, or "**as much as anatomically possible**" (avoiding compartment syndrome), should be infiltrated directly into and around the **wound site(s)**,.
- **Dilution:** If the calculated volume of **RIG** is insufficient to infiltrate all the wounds, it may be diluted to a volume sufficient for all wounds to be effectively and safely infiltrated.
- **Remaining Dose:** If any **RIG** is left over after adequate wound infiltration, it should be injected via deep **intramuscular (IM)** route at a site distant from the vaccine administration site,,.
- **Precautions & Skin Testing:** Equine immunoglobulin carries a small risk of **anaphylactic reaction** (1/45,000 cases). There are no scientific grounds for performing a skin test prior to administering **equine immunoglobulin** because testing does not predict reactions, and it should be given whatever the result of the test,. The treating physician must always be prepared to manage **anaphylaxis**,.

#### Calculation of ERIG Dose for a Given Body Weight

The dose calculation for **Equine Rabies Immunoglobulin (ERIG)** is strictly based on the patient's **body weight**.

## Formula

$$\text{Total ERIG Dose (in IU)} = \text{Body Weight (in kg)} \times 40 \text{ IU/kg},.$$

(Subject to a maximum cap of **3000 IU**).

## Example Calculation

If a patient presents with a given body weight of **60 kg**:

- **Total Dose = 60 kg x 40 IU/kg,.**
- **Total Dose = 2400 IU**

*Interpretation: The patient requires exactly **2400 IU of ERIG**. The entire calculated dose must be infiltrated into and around the wound(s) as much as anatomically possible, and any remaining volume from this **2400 IU** should be injected intramuscularly at a site distant from the **anti-rabies vaccine** injection site,,.*

## 6. Prevention Strategies for Rabies

### QUESTION

Discuss the pre-exposure and post-exposure strategies for prevention of rabies.

### ANSWER

## Prevention of Rabies

The prevention of human rabies is based on two main strategies: **Pre-Exposure Prophylaxis (PrEP)** for individuals at high risk and **Post-Exposure Prophylaxis (PEP)** following a suspected rabid animal bite.

### I. Pre-Exposure Prophylaxis (PrEP)

**PrEP** is recommended for anyone who is at continual, frequent, or increased risk of exposure to the **rabies virus** either as a result of their residence or occupation.

#### Target / High-Risk Population

- **Laboratory staff** handling the virus and infected material.
- **Clinicians** and persons attending to human rabies cases.
- **Veterinarians**, animal handlers, and catchers.
- **Wildlife wardens** and quarantine officers.
- **Travellers** from rabies-free areas to rabies-endemic areas with extensive outdoor exposure.
- Children living in rural high-risk areas.

#### Vaccine Schedule

- Administered on **days 0, 7, and 21 or 28**.
- **Dose and Route:** Full **Intramuscular (IM)** dose (**1.0 ml or 0.5 ml**, depending on the vaccine type) OR **Intradermal (ID)** dose of **0.1 ml** volume per site (one site each day).

#### Booster and Antibody Monitoring

- Routine boosters are **not required** after completing the primary series of **PrEP**.
- **Antibody monitoring** is preferred. A booster is recommended only if rabies virus neutralizing antibody titres fall to **<0.5 IU/ml**.
- **Monitoring frequency:** Every **6 months** for laboratory personnel; every **2 years** for veterinarians and animal health officers.

### II. Post-Exposure Prophylaxis (PEP)

Every instance of human exposure should be treated as a **medical emergency**. The aim is to neutralize the inoculated **virus** before it can enter the **nervous system**.

The strategy comprises three main pillars:

## 1. Local Treatment of the Wound (First-Aid & Chemical Treatment)

Prompt and adequate **local treatment** is of maximal value when applied immediately after exposure.

- **Cleansing:** Immediate flushing and washing of the **wound(s), scratches, and adjoining areas** with plenty of **soap and water** under a running tap for at least **15 minutes**.
- **Chemical Treatment:** Residual **virus** should be inactivated by irrigation with **virucidal agents** like **alcohol** (400-700 ml/litre or 70% ethyl/isopropyl alcohol), **tincture iodine**, or **0.01% aqueous solution of povidone-iodine**.
- **Suturing:** Immediate suturing is **contraindicated**. If absolutely necessary, it should be done **24-48 hours later**, applying the minimum possible loose stitches under the cover of **rabies immunoglobulin** applied locally.
- **Antibiotics & Anti-tetanus:** Administer **antitetanus prophylaxis** and appropriate **antibiotics** to prevent secondary bacterial infection.

## 2. Classification of Exposure and Management Strategy

### Category I

- **Touching or feeding animals**, licks on intact skin.  
■ *Management:* None, except local wound toilet (ensure history is reliable).

### Category II

- **Nibbling of uncovered skin**, minor scratches or abrasions without bleeding.  
■ *Management:* Immediate **active immunization (vaccine)** and local treatment of the wound.

### Category III

- **Single or multiple transdermal bites or scratches**, licks on broken skin; contamination of mucous membranes with saliva; all contacts with bats.  
■ *Management:* Immediate **active immunization (vaccine)** + **passive immunization (Rabies Immunoglobulin)** + local treatment of the wound.

## 3. Active Immunization (Anti-Rabies Vaccine)

**Cell culture vaccines (CCVs)** or **purified duck embryo vaccines (PDEV)** are utilized. The **gluteal region** is strictly not recommended as fat retards antigen absorption.

### Intramuscular (IM) Regimens

- **Essen Regimen (5-dose):** One IM dose (**1.0 ml or 0.5 ml**) into the **deltoid** (or anterolateral thigh in children) on **days 0, 3, 7, 14, and 28**.
- **Zagreb Regimen (4-dose / 2-1-1):** Two doses on **day 0** (one in each deltoid/thigh), followed by one dose on **day 7**, and one dose on **day 21**.

### Intradermal (ID) Regimens

- **Updated Thai Red Cross Regimen (2-2-2-0-2):** Two-site ID injection of **0.1 ml** per site on **days 0, 3, 7, and 28** (Day 14 dose is missed). Only **CCVs** are recommended for the **ID route**.

## 4. Passive Immunization (Rabies Immunoglobulin - RIG)

Administered to neutralize the **virus** at the wound site before vaccine-induced antibodies are produced.

### Indications

- Mandatory for all **Category III exposures** and for immunocompromised individuals with Category II or III exposures.

### Dosage

- **Human Rabies Immunoglobulin (HRIG): 20 IU/kg** body weight (max **1500 IU**).
- **Equine Rabies Immunoglobulin (ERIG): 40 IU/kg** body weight (max **3000 IU**).

### Administration

- The entire dose, or "**as much as anatomically possible**", should be infiltrated into and around the **wound(s)**.
- Any remaining dose should be given by deep **intramuscular (IM)** injection at a site distant from the vaccine administration site.

### Timing

- Should be administered preferably at or as soon as possible after the initiation of post-exposure vaccination, but not beyond the **seventh day** after the first vaccine dose.

## 5. Management of Re-exposure in Previously Vaccinated Individuals

For individuals who can document full pre-exposure or post-exposure prophylaxis previously:

- **Schedule:** Two booster doses (**IM or ID**) given on **days 0 and 3**.
- Proper **local wound toilet** must be done.
- **Rabies Immunoglobulin (RIG)** is **NOT** required.
- *(Note: If re-exposure occurs within **3 months** of previous prophylaxis, only wound toilet is required. If the previous vaccination history is doubtful, treat as a fresh case.)*

## 7. Indications for Rabies PEP and Dog Observation

### QUESTION

What are the indications for rabies post-exposure prophylaxis? Add a note on observation of biting dog for 10 days.

### ANSWER

### Indications for Rabies Post-Exposure Prophylaxis (PEP)

All **Category II** and **Category III** exposures assessed as carrying a risk of developing rabies require **Post-Exposure Prophylaxis (PEP)**.

#### Category II Exposure

- **Nibbling of uncovered skin**, minor scratches, or abrasions without bleeding.

#### Category III Exposure

- **Single or multiple transdermal bites or scratches**, licks on broken skin, contamination of mucous membrane with saliva from licks, and all contacts with bats.

The risk of developing rabies is increased and strongly indicates the need for **PEP** if:

- The biting mammal is a known **rabies reservoir** or vector species.
- The animal looks sick or has an **abnormal behaviour**.
- A wound or mucous membrane was contaminated by the animal's **saliva**.
- The bite was **unprovoked**.
- The animal has **not been vaccinated**.
- The biting animal cannot be **traced or identified**.

#### Important Field Point

In developing countries, the **vaccination status** of the suspected animal alone should not be considered when deciding whether to initiate prophylaxis or not; **post-exposure prophylaxis** must be initiated promptly.

### Observation of Biting Dog for 10 Days

- **Target Animals:** The observation period strictly applies to domestic **dogs, cats, or ferrets**.
- **Duration of Observation:** The animal must be observed for a **10-day observation period** starting from the date of the bite.
- **Modifying the Regimen:**
  - **Post-exposure prophylaxis** may be discontinued or modified if the suspected animal remains healthy throughout the **10 days**, or is humanely killed and declared negative for rabies by a WHO-prescribed laboratory test.
  - **Intramuscular (IM) Regimen:** If the animal remains healthy after **10 days** of observation, the **IM regimen** of rabies vaccination may be converted to **pre-exposure prophylaxis** by skipping the

**day-14 dose** but receiving the **day-28 dose**.

- **Intradermal (ID) Regimen:** The **ID regimen** should be completed in its entirety, regardless of the biting animal's status after the **10-day observation period**.
- If the dog dies, goes missing, or shows signs of rabies during the **10 days**, the full prescribed course of **PEP** must be continued without interruption.

## 8. Street Virus and Fixed Virus in Rabies

### QUESTION

Differentiate between street virus and fixed virus in rabies.

### ANSWER

## Differences between Street Virus and Fixed Virus in Rabies

Based on the provided sources, the causative agent of rabies (**Lyssavirus type 1**) can be differentiated into two types:

### 1. Source and Origin

- **Street Virus:** It is the virus recovered from naturally occurring cases of rabies.
- **Fixed Virus:** It is obtained by the serial brain-to-brain passage of the **street virus** in rabbits.

### 2. Incubation Period

- **Street Virus:** Shows a long and highly variable **incubation period** (e.g., **20-60 days** in dogs).
- **Fixed Virus:** Has a short, fixed, and reproducible **incubation period** that becomes constant between **4-6 days** when injected intracerebrally into suitable animals.

### 3. Formation of Negri Bodies

- **Street Virus:** Typically forms **Negri bodies** in the host.
- **Fixed Virus:** It does *not* form **Negri bodies**.

### 4. Pathogenicity and Multiplication

- **Street Virus:** It is highly pathogenic for all mammals and multiplies in extra-neural tissues.
- **Fixed Virus:** Its pathogenicity is modified, and it *no longer multiplies* in extra-neural tissues.

### 5. Public Health Application

- **Street Virus:** Responsible for causing the clinical disease in humans and animals.
- **Fixed Virus:** It is extensively used in the preparation of the **anti-rabies vaccine** for the **prevention** of the disease.