5.5. What are we going to do – human component?

Using a set of commonly asked questions, this section provides guidelines for both bite-victims and health-care personnel on what they need to do if they/a patient have/has been exposed, including management of animal bite wounds and human rabies prophylaxis. It also provides guidelines on administration of pre-exposure prophylaxis. Click here for more information on human rabies prophylaxis and an overview of the steps required.

This section contains information on the following:

5.5.1. What is the difference between pre- and post-exposure prophylaxis?

- **PreP** [1] is given prior to an exposure and does not include RIG [2]. It is given to those at highest risk of being exposed, for example people working in a rabies vaccine manufacturing facility or in a rabies diagnostic laboratory, veterinarians, and those living in or traveling to regions of the world where rabies is highly endemic or currently epidemic, especially children living at daily risk of exposure.
- **PEP** [3]is given after an exposure to rabies has occurred and should include both RIG and rabies vaccine.
- A person that has received either PreP or PEP previously and is subsequently exposed to rabies does not need to receive RIG, and only needs two booster doses of vaccine, one given on day 0 and one on day 3.

[1] Pre-exposure prophylaxis

[2] Rabies Immunoglobulin

[3] Post-exposure prophylaxis

5.5.2. Who should receive pre-exposure prophylaxis?

Who should receive PreP [1] when starting a canine rabies control program?
All people in potential contact with dogs during the control programme or in contact with potentially infectious tissue, for example in a diagnostic laboratory.

I am planning to bring a pet dog home. Should all of my family members receive PreP?
No. You should ensure that your dog is vaccinated with an effective canine rabies vaccine before bringing the dog home and that it is kept current on its rabies vaccination series. You should teach your family, especially children, how to treat the dog properly and to tell a parent if they are bitten.

Should I vaccinate my children?
You should educate your children about how to treat pets, how to avoid being bitten by community dogs, and that they need to tell an adult if they were bitten, scratched or licked by a dog. In some rabies endemic areas where the incidence of dog bites in children is especially high, PreP should be considered as one of the ways to protect their lives.

[1] Pre-exposure prophylaxis

5.5.3. What do we need to know about products for human rabies prophylaxis?

Where can I find the vaccine?
Vaccine may be available at a specific anti-rabies clinic, in an emergency health clinic, or hospital.

Why do I need two different types of products for PEP [1]?
- You need two products because one product provides passive immunity and the other provides active immunity.
- You receive passive immunity through RIG [2]. RIG is a product containing antibodies produced specifically against rabies virus and begins to destroy rabies virus immediately when it is administered into wounds inflicted by rabid animals.
- You receive active immunity by being vaccinated with rabies vaccine. Rabies vaccine causes your body to produce its own antibodies to protect against rabies virus. It takes 7 to 14 days for your body to produce its own antibody after receiving rabies vaccine and therefore by injecting RIG into and around the wound areas, your body will have more protection against rabies.

RIG is not available where I live, is there an alternative?
There is no alternative to RIG. It is generally available in larger cities. If there is a delay in finding RIG, you should begin the vaccination series immediately and seek RIG elsewhere if possible. You can receive RIG up to 7 days after your PEP series was initiated.

What is the difference between ERIG [3] and HRIG [4]?
- ERIG is equine RIG and is produced in horses.
- HRIG is human RIG and is produced in humans.
- Both products contain antibodies specifically made against rabies virus. Both products are produced by vaccinating horses (ERIG) or humans (HRIG) and harvesting their plasma which contains antibodies against rabies virus.
- The dose of ERIG is twice as high (40 IU [5]/Kg of body weight) as the dose needed if you receive HRIG (20 IU/Kg of body weight).

What is the difference between CCV [6] and NTV [7]?

- NTVs are usually crude vaccines made by infecting sheep or goats with rabies virus and harvesting their brain tissue to produce vaccine. The course of vaccination is long and painful and not always effective. A more purified NTV is produced in the brain tissue of infected mice. Side effects are more often reported in persons who receive NTVs than in those that receive CCVs. The side effects from NTVs can be very serious including paralysis, whereas side effects of CTVs are extremely rare and only very minor.
- CCVs are produced in primary or continuous cell lines and are highly purified and among the most efficacious vaccines in the world. The course of vaccination is shorter. Side effects most commonly reported are similar to other vaccines including: pain at the site of injection, headache, fatigue, induration etc. Very seldom more serious adverse reactions to CTVs have been reported including Guillain Barré Syndrome described here
- WHO [8] strongly advocates the use of CCVs (click here for the list of WHO pre-qualified vaccines) and recommends complete discontinuation of the production and use of NTVs, as stated here.

I started my PEP with one brand of CCV but need to continue with another brand, is that safe?

It is best to continue with the same brand of CCV if possible, however if this is not possible, substitution with another WHO pre-qualified rabies vaccine is acceptable.

I have been vaccinated previously with a CCV, how long does my vaccine (immunity) last?

Modern CCVs are highly immunogenic (i.e. capable of inducing antibody production). Immunity usually lasts for 5 years, but this may vary depending on the vaccine used. Testing for antibodies may be used if available to check whether boostering is necessary. If you have received a CCV previously and are subsequently exposed to rabies, you will need two boosters only, one on day 0 and one on day 3.

[1] Post-exposure prophylaxis

[2] Rabies Immunoglobulin

[3] Equine Rabies Immunoglobulin

[4] Human Rabies Immunoglobulin

[5] International Unit

[6] Cell-culture Vaccine

[7] Nerve Tissue-based Vaccine

[8] World Health Organization

5.5.4. How do we deal with or prevent exposures?

I have been bitten by a dog, what should I do?

Immediate washing of the wound with soap and water is extremely important and one of the most effective ways of reducing the risk of contracting rabies. Since rabies is transmitted through the bite of a rabid animal, thorough washing of the wound will allow you to remove as much saliva (hence virus) from the wound as possible and will greatly decrease chances of infection. Wash the wound with soap (or detergent) and water for at least 15 minutes and seek medical treatment. If no soap is

available, at minimum wash the wound with water for at least 15 minutes. Then go straight to hospital (see below) for appropriate medical attention. Click here for more information on management of bite wounds and rabies prophylaxis.

Photo courtesy of Serengeti Carnivore Disease Project

Can I just observe the dog and not get vaccinated?
Dogs can shed rabies virus up to 10 days before showing clinical signs of rabies. In the event of a dog bite, wound care should be applied immediately (washing of the wound with soap and water for at least 15 minutes) and the advice of a medical expert should be sought. Vaccination should be initiated and if the suspect dog is alive after 10 days, the vaccination series can be stopped.

How do I take care of the wound I just received from a dog that may have had rabies?
Wash the wound with soap, or detergent and lots of water for at least 15 minutes and then seek medical help.

Photo courtesy of Dr S.R. Garg, Hisar, India

I was bitten by a dog three months ago and the dog died four days after it bit me. I have not taken any treatment. Am I at risk? What should I do?
In areas where canine rabies is present, it is advisable to get post-exposure vaccination.

After I have been exposed, how long can I wait before getting PEP [1]?
You should seek PEP as soon as possible. Do not wait.

Should I receive PEP even for a small scratch or wound?
Yes, if the animal was a suspect or confirmed rabid animal.

What do I need to do when dressing out/butchering animals that may have been exposed to rabies?
Be sure to wear protective clothing (gloves, mask, goggles) to avoid being exposed to infected tissue. If the animal was exposed less than seven days previously, cut out a large section around where they were exposed and destroy the tissue. If they were exposed more than seven days previously, destroy the animal and do not eat the meat.

Why do I have to have RIG [2] injected into the wound as it may be painful?
RIG is injected into the wound because, in order for it to be effective, it needs to come in direct physical contact with the rabies virus deposited into the wound site through the bite or scratch of a rabid animal.

Do I really need to have RIG when I have PEP?
If at all possible, RIG should be included in PEP because it begins to work immediately to destroy rabies virus that may have been deposited in bite or scratch wounds. It is generally recommended for more severe exposures, given that in many countries/areas it is not promptly available.

I have been vaccinated previously with a CCV [3], and now I have been exposed to a rabid animal, do I need to go through the full PEP regimen again?
No. You will only need two booster doses of vaccine, given on day 0 and day 3. No RIG is needed.

I have been vaccinated previously with a CCV, and now I have been exposed to a rabid animal, am I protected against rabies or do I need to be vaccinated again?
Yes, you will need two booster doses of vaccine, given on day 0 and day 3.

The dog that bit me was vaccinated, do I still need to get PEP?
In principle no. In rare occasions, vaccinated dogs have contracted rabies. Therefore, the vaccination history of the dog should be verified by a public health official. If it is questionable, the dog should be observed daily for 10 days for signs of rabies under the care of a competent public health official or in the care of the owners with supervision of the public health official. If the dog does show clinical signs of rabies, it should be examined by a veterinarian and he/she should determine if it needs to be euthanized and tested for rabies. In the event that there are no testing facilities available, and the dog is showing clinical signs of rabies, PEP should be administered immediately.

Is it necessary to be vaccinated PEP if the dog that bit me is still alive?
Dogs can shed rabies virus up to 10 days prior to showing clinical signs of disease. In areas where canine rabies is present and there are no available facilities to test the animal, then PEP should be initiated immediately. If the dog is alive after 10 days the PEP can be discontinued.

What do I need to do if a rabies outbreak has occurred? Contact public health officials. Avoid contact with animals that could have been exposed to rabies. Educate your family members about rabies and avoiding animals that have potentially been exposed to rabies.

[1] Post-exposure prophylaxis

[2] Rabies Immunoglobulin

[3] Cell-culture vaccine

5.5.5. What do we need to know about regimens, doses and schedules?

What is the difference between intradermal and intramuscular vaccination?

- Intramuscular administration is given as a 0.5 - 1 mL volume (depending on the vaccine used) deep into the deltoid muscle in adults and into the lateral area of the thigh in infants.
- Intradermal is given as a 0.1 mL volume into the upper skin area over the deltoid muscle in adults or lateral thigh area of infants. A small bleb with an 'orange peel' appearance is confirmation that the vaccine was administered correctly.
- Persons of any age group can be vaccinated with WHO [1] pre-qualified CCV [2] vaccines (click here for the list) either intramuscularly or intradermally at the doses recommended above independently of the age group.
- The intradermal regimen requires considerably less vaccine than the intramuscular regimen, therefore intradermal vaccination should be used when resources are limited and the number of patients requiring PEP [3] every day is at least two or more.

Photo courtesy to Saneekan Rosamontri

Is there a single dose of rabies vaccine that is available?
No.

How many doses of vaccine will I need to get for PreP [4]?
Three doses of vaccine given intramuscularly or intradermally on days 0, 7 and either day 21 or 28.

How many doses of vaccine will I need to get for PEP?

- PEP can be administered in one of two ways, either intramuscularly or intradermally.
- If you receive PEP intramuscularly, then you will receive either 4 or 5 doses of vaccine depending

on which vaccination regimen your physician will use.

- If you receive intradermal vaccination, you will receive multiple doses of rabies vaccine given in smaller amounts generally given on four different days over a period of 28 to 90 days.

Is it okay to switch between intramuscular and intradermal administration of CCV for PEP?
This is not recommended by the WHO.

I have had a delay in my PreP/PEP schedule, what is the flexibility of the schedules?
The regimen should be followed as closely as possible. However, a one or two day deviation from the PEP/PreP regimen is acceptable. In case of longer delays, you should contact a physician so that he/she can evaluate the situation.

How often do I need to get a booster after I have had my PreP?
Persons at continuous or frequent risk of exposure (workers in rabies vaccine production facilities, veterinarians living in highly endemic areas etc.) should have their titer (i.e. the quantity of antibody present in their blood) checked periodically: every 6 months for persons working with live rabies virus and every year for other professions at permanent risk of exposure to rabies. If their titer falls below 0,5 IU [5]/mL, they should receive one routine booster. Other persons do not need a routine booster. Specific laboratory analyses are required to measure the level of antibody in serum samples of vaccinated individuals. These tests are costly and are currently only performed in international reference laboratories.

Do I need to have a blood test to check my antibody titer before I receive my booster vaccination after exposure? No.

I have received three doses of vaccine in the PEP regimen and the dog that bit me is still alive, should I continue with the vaccination regimen and complete the entire PEP course?
There is no need to continue if the dog is still alive ten days after the exposure occurred.

The doctor administered the vaccine into my buttocks, what do I do now?
The vaccine should be re-administered correctly, in the deltoid area.

What do I do if I have missed a dose of vaccine on the prescribed date?
The regimen should be followed as closely as possible. However, a one or two day deviation from the PEP/PreP regimen is acceptable. In case of longer delays, you should contact a physician so that he/she can evaluate the situation.

[1] World Health Organization

[2] Cell-culture Vaccine

[3] Post-exposure prophylaxis

[4] Pre-exposure prophylaxis

[5] International Unit

5.5.6. Are there any conditions that might affect post-exposure prophylaxis?

My baby was bitten by a suspect rabid animal, is he/she too young to get PEP [1]?
No. Rabies vaccine is a life saving vaccine and should not be withheld to anyone that has been exposed.

I am pregnant, is it safe for me to get PEP?
Yes. Rabies vaccine is a life saving vaccine and should not be withheld to anyone that has been exposed.

I am immunocompromised, is it safe for me to get PEP?
Yes. Rabies vaccine is a life saving vaccine and should not be withheld to anyone that has been exposed. If you are immunocompromised, you should receive PEP under the personal care of a physician.

I have a fever, should I wait to receive PEP?
No. Rabies vaccine is a life saving vaccine and should not be withheld to anyone that has been exposed. You should receive PEP under the personal care of a physician.

Can I drink alcohol during my course of vaccination?
Excessive consumption of alcohol should be avoided.

[1] Post-exposure prophylaxis