

WHO Immunological Basis for Immunization Series

**Module 17: Rabies
Update 2017**

Immunization, Vaccines and Biologicals



**World Health
Organization**

WHO Immunological Basis for Immunization Series

**Module 17: Rabies
Update 2017**

Immunization, Vaccines and Biologicals



**World Health
Organization**

The immunological basis for immunization series: module 17: rabies vaccine (Immunological basis for immunization series ; module 17)

ISBN 978-92-4-151337-1

© World Health Organization 2017

Some rights reserved. This work is available under the
Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence
(CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: “This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition”.

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. The immunological basis for immunization series: module 17: rabies vaccines. Geneva: World Health Organization; 2017 (Immunological basis for immunization series; module 17).
Licence: [CC BY-NC-SA 3.0 IGO](https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>.
To submit requests for commercial use and queries on rights and licensing,
see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Contents

| | |
|---|-----------|
| <i>Abbreviations and acronyms</i> | <i>iv</i> |
| <i>Preface</i> | <i>vi</i> |
| 1. Rabies virus and other lyssaviruses and disease | 1 |
| 1.1 Structure | 1 |
| 1.2 Classification | 2 |
| 1.3 Pathology | 3 |
| 1.4 Epidemiology..... | 4 |
| 2. Immunity | 5 |
| 2.1 Preventing clinical disease..... | 5 |
| 2.2 Rabies vaccines | 6 |
| 2.3 Response to immunization (humoral and cellular) | 7 |
| 2.4 Role of passive immunity (HRIG, ERIG, Mabs) | 9 |
| 2.5 Routes of active immunization..... | 10 |
| 2.6 Immune response in different risk groups | 11 |
| 3. Duration of immunity after immunization | 14 |
| 3.1 Primary immune | 14 |
| 3.2 Duration of rabies virus-neutralizing antibody | 15 |
| 3.3 Anamnestic response | 16 |
| 3.4 Timeliness of routine booster vaccination..... | 19 |
| 4. Measuring immune response | 20 |
| 4.1 Choosing the test to fit the purpose..... | 20 |
| 4.2 Virus neutralization assays..... | 20 |
| 4.3 Binding assays | 21 |
| 4.4 Measuring cell-mediated immunity | 22 |
| 5. Innocuity and efficacy of rabies biologicals | 23 |
| 6. Future prospects | 24 |
| References | 26 |
| Acknowledgements | 40 |

Abbreviations and acronyms

| | |
|---------|--|
| ABLV | Australian bat lyssavirus |
| ACIP | Advisory Committee on Immunization Practices |
| ARAV | Aravan lyssavirus |
| ART | Antiretroviral Therapy |
| APC | Antigen-presenting cells |
| BBLV | Bokeloh bat lyssavirus |
| CCV | Cell culture rabies vaccine |
| CNS | central nervous system |
| dRIT | direct Rapid Immunohistochemical test |
| DPT-IPV | Combined diphtheria, tetanus, whole-cell pertussis and inactivated poliomyelitis vaccine |
| DUVV | Duvenhage lyssavirus |
| EBLV-1 | European bat lyssavirus type 1 |
| EBLV-2 | European bat lyssavirus type 2 |
| ELISA | Enzyme-linked immunosorbent assay |
| ERIG | Equine rabies immune globulin |
| FAT | Fluorescent antibody test |
| FAVN | Fluorescent antibody virus neutralization |
| GBS | Guillain-Barré syndrome |
| HAART | Highly Active Antiretroviral Therapy |
| HDCV | Human diploid cell rabies vaccine |
| HIV | Human immunodeficiency virus |
| HRIG | Human rabies immune globulin |
| ICTV | International Committee on Taxonomy of Viruses |
| ID | Intradermal |
| I KOV | Ikoma lyssavirus |
| IM | Intramuscular |
| IRKV | Irkut lyssavirus |
| JEV | Japanese encephalitis vaccine |

| | |
|-------|--|
| KHUV | Khujand lyssavirus |
| LBV | Lagos bat lyssavirus |
| Mab | Monoclonal antibodies |
| MNT | Mouse neutralization test |
| MOKV | Mokola lyssavirus |
| NTV | Nerve tissues vaccines |
| PCECV | Purified chick embryo cell rabies vaccine |
| PCR | Polymerase chain reaction |
| PDEV | Purified duck embryo cell rabies vaccine |
| PEP | Post-exposure prophylaxis |
| PIKA | Polyinosinic Polycytidylic Acid Based Adjuvant |
| PrEP | Pre-exposure vaccination |
| PVRV | Purified Vero cell rabies vaccine |
| RABV | Rabies lyssavirus |
| RFFIT | Rapid fluorescent focus inhibition test |
| RIG | Rabies immune globulin |
| SHIBV | Shimoni bat lyssavirus |
| SOT | Solid organ transplantation |
| VNA | Virus neutralizing antibodies |
| WCBV | West Caucasian bat lyssavirus |
| WHO | World Health Organization |

Preface

This module is part of the WHO series The Immunological Basis for Immunization, which was initially developed in 1993 as a set of eight modules, comprising one module on general immunology and seven modules each devoted to one of the vaccines recommended for the Expanded Programme on Immunization, i.e. vaccines against diphtheria, measles, pertussis, polio, tetanus, tuberculosis and yellow fever. Since then, this series has been updated and extended to include other vaccines of international importance. The main purpose of the modules is to provide national immunization managers and vaccination professionals with an overview of the scientific basis of vaccination against a range of important infectious diseases. The modules developed since 1993 continue to be vaccine-specific, reflecting the biological differences in immune responses to the individual pathogens and the differing strategies employed to create the best possible level of protection that can be provided by vaccination. The modules also serve as a record of the immunological basis for the WHO recommendations on vaccine use, published in the WHO vaccine position papers.*

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_26571

