



WHO GUIDELINE ON USE OF FERRITIN CONCENTRATIONS TO ASSESS IRON STATUS IN INDIVIDUALS AND POPULATIONS



World Health
Organization

WHO GUIDELINE ON USE OF FERRITIN CONCENTRATIONS TO ASSESS IRON STATUS IN INDIVIDUALS AND POPULATIONS

WHO guideline on use of ferritin concentrations to assess iron status in individuals and populations

ISBN 978-92-4-000012-4 (electronic version)

ISBN 978-92-4-000296-8 (print version)

© World Health Organization 2020

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. WHO guideline on use of ferritin concentrations to assess iron status in individuals and populations. Geneva: World Health Organization; 2020. 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.

Cover design and layout: Alberto March (Barcelona, Spain)

Printed in Switzerland

CONTENTS

PUBLICATION HISTORY	vii
ACKNOWLEDGEMENTS	vii
Financial support	vii
EXECUTIVE SUMMARY	viii
Purpose of the guideline	viii
Guideline development methodology	viii
Available evidence	ix
Recommendations and remarks	ix
QUESTION 1. Is ferritin an adequate marker of iron stores (risk of deficiency and risk of iron overload)?	ix
QUESTION 2. Is ferritin an adequate marker for assessing the impact of iron interventions?	xi
QUESTION 3. How should ferritin be measured?	xi
QUESTION 4. Should ferritin be measured in combination with indicator(s) of infection or inflammation?	xii
QUESTION 5. What are the population prevalence ranges for determining a public health problem?	xiii
Research gaps	xiv
Plans for updating the guideline	xiv
INTRODUCTION	1
Objectives	2
Scope	2
Population of interest	2
Priority questions	2
Outcomes of interest	3
Target audience	3
BACKGROUND	5
Iron deficiency and iron overload	6
Iron deficiency	6
Iron overload	6
Assessment of iron status	7
Ferritin	7
Ferritin cut-off values	8
Clinical pathways for iron deficiency and overload	8
Ferritin assays	10
History of the project on the use of ferritin for the assessment of iron status	11
Meetings on the ferritin project	11
Why is it important for WHO to develop this guideline?	13

EVIDENCE AND RECOMMENDATIONS	15
QUESTION 1. Is ferritin an adequate marker of iron stores (risk of deficiency and risk of iron overload)?	16
Summary of evidence	16
Summary of the considerations of the members of guideline development group for determining the direction and strength of the recommendations	17
Recommendations	18
Rationale	18
Remarks	19
QUESTION 2. Is ferritin an adequate marker for assessing the impact of iron interventions?	20
Summary of evidence	20
Summary of the considerations of the members of guideline development group for determining the direction and strength of the recommendations	21
Recommendations	21
Remarks	22
QUESTION 3. How should ferritin be measured?	22
Summary of evidence	22
Summary of the considerations of the members of guideline development group for determining the direction and strength of the recommendations	23
Recommendations	24
Remarks	24
QUESTION 4. Should ferritin be measured in combination with indicator(s) of infection or inflammation?	25
Summary of evidence	25
Summary of the considerations of the members of guideline development group for determining the direction and strength of the recommendations	25
Recommendations	26
Remarks	26
QUESTION 5. What are the population prevalence ranges for determining a public health problem?	27
Summary of evidence	27
Summary of the considerations of the members of guideline development group for determining the direction and strength of the recommendations	28
Remarks	28
IMPLEMENTATION OF THE GUIDELINE	30
Implementation considerations	30
Regulatory considerations	30
Ethical and equity considerations	31
Monitoring and evaluation of guideline implementation	31

RESEARCH GAPS	32
GUIDELINE DEVELOPMENT PROCESS	32
WHO steering group	33
Guideline development group	33
External resource persons	34
Systematic review teams	34
Management of conflicts of interests	34
Identification of priority questions and outcomes	34
Evidence identification and retrieval	35
Quality assessment and grading of evidence	35
Formulation of recommendations	36
Decision-making during the guideline development group meeting	37
Document preparation and peer review	37
DISSEMINATION AND PLANS FOR UPDATING	38
Dissemination	38
Plans for updating the guideline	38
REFERENCES	39
ANNEX 1. QUESTIONS ON THE USE OF FERRITIN TO ASSESS THE IRON STATUS OF POPULATIONS IN POPULATION, INTERVENTION, CONTROL, OUTCOMES (PICO) FORMAT	48
QUESTION 1. Is ferritin an adequate marker of iron stores (risk of deficiency and risk of iron overload)?	48
QUESTION 2. Is ferritin an adequate marker for assessing the impact of iron interventions?	48
QUESTION 3. How should ferritin be measured?	49
QUESTION 4. Should ferritin be measured in combination with indicator(s) of infection or inflammation?	50
QUESTION 5. What are the population prevalence ranges for determining a public health problem?	50
ANNEX 2. GRADE SUMMARY OF FINDINGS TABLES	51
A. QUESTION 1. Estimates of the accuracy of serum ferritin to assess iron deficiency in apparently healthy individuals	51
B. QUESTION 1. Estimates of the accuracy of serum ferritin to assess iron deficiency in non-healthy individuals	52
C. QUESTION 1. Estimates of the accuracy of serum ferritin to assess iron overload in non-healthy individuals	53
ANNEX 3. WHO STEERING GROUP	54

ANNEX 4. WHO GUIDELINE DEVELOPMENT GROUP	55
ANNEX 5. EXTERNAL RESOURCE PERSONS	57
ANNEX 6. SYSTEMATIC REVIEW TEAMS	58
QUESTION 1. Is ferritin an adequate marker of iron stores (risk of deficiency and risk of iron overload)?	58
QUESTION 2. Is ferritin an adequate marker for assessing the impact of iron interventions?	58
QUESTION 3. How should ferritin be measured?	59
QUESTION 4. Should ferritin be measured in combination with indicator(s) of infection or inflammation?	59
QUESTION 5. What are the population prevalence ranges for determining a public health problem?	59
ANNEX 7. PEER-REVIEW	60
ANNEX 8. WHO SECRETARIAT	61
WHO Regional and Country Office	62

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_24675

