

ANTIMICROBIAL STEWARDSHIP PROGRAMMES

IN HEALTH-CARE FACILITIES IN LOW- AND

MIDDLE-INCOME COUNTRIES

A WHO PRACTICAL TOOLKIT





ANTIMICROBIAL STEWARDSHIP PROGRAMMES

IN HEALTH-CARE FACILITIES IN LOW- AND

MIDDLE-INCOME COUNTRIES

**A WHO PRACTICAL TOOLKIT**

Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries.  
A WHO practical toolkit

ISBN 978-92-4-151548-1

© World Health Organization 2019

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.

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.** Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries. A practical toolkit. Geneva: World Health Organization; 2019.  
Licence: CC 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.

Design and Layout by Phoenix Design Aid

Printed in France

# CONTENTS

List of figures, tables and boxes . . . . .	v
Acknowledgements . . . . .	vii
Foreword . . . . .	viii
List of abbreviations . . . . .	ix
Glossary . . . . .	x
<b>1. Introduction . . . . .</b>	<b>xii</b>
1.1 Background . . . . .	1
1.2 Antimicrobial stewardship – an integral component of health systems . . . . .	2
1.3 Establishing AMS programmes at a glance . . . . .	3
<b>2. Structures for national (state/regional) AMS programmes . . . . .</b>	<b>5</b>
2.1 Introduction . . . . .	6
2.2 Selecting the national core elements . . . . .	6
2.3 How to use the national core elements list . . . . .	7
<b>3. Structures for health-care facility AMS programmes . . . . .</b>	<b>11</b>
3.1 Background . . . . .	12
3.2 Selecting the health-care facility core elements . . . . .	12
3.3 How to use the health-care facility core elements list . . . . .	12
<b>4. Planning an AMS programme in a health-care facility . . . . .</b>	<b>17</b>
4.1 Introduction . . . . .	18
4.2 Conducting a situational or SWOT analysis . . . . .	19
4.3 Identifying human resources . . . . .	20
4.4 Link between IPC and AMS . . . . .	22
4.5 Use of antibiotics in health-care facilities . . . . .	24
4.5.1 Quantity – AMC data . . . . .	24
4.5.2 Quality – antibiotic use data (PPS) . . . . .	25
4.5.3 Quality – antibiotic audit data . . . . .	26
4.7 The EML and AWaRe classification . . . . .	26
4.7 Microbiology . . . . .	28
<b>5. Performing AMS interventions in a health-care facility . . . . .</b>	<b>30</b>
5.1 Implementing an AMS programme . . . . .	31
5.2 AMS interventions, implementation and behaviour change . . . . .	31
5.3 Identifying local targets for improving antibiotic use . . . . .	32
5.4 A systematic approach to implementing AMS interventions . . . . .	32
5.5 Basic AMS interventions . . . . .	34
5.6 Moving beyond basic AMS interventions . . . . .	35
5.7 More detailed AMS interventions to improve antibiotic prescribing . . . . .	37
5.8 Audit with feedback . . . . .	43
5.8.1 Prospective (real-time) audit with feedback . . . . .	43
5.8.2 Retrospective audit with feedback . . . . .	43
5.8.3 Selecting one or more infections for audit . . . . .	43
5.8.4 Selecting antibiotic(s) for audit . . . . .	44
5.9 Role of IT in an AMS programme . . . . .	46

<b>6. Assessing AMS programmes</b>	<b>47</b>
6.1 Introduction	48
6.2 Structural measures/indicators	48
6.3 Process measures/indicators	48
6.4 Outcome measures/indicators	49
6.5 How to begin assessing AMS programmes	49
<b>7. Education and training</b>	<b>53</b>
7.1 AMS competencies	54
7.2 Education and training	58
7.4 Effectiveness of different training and education delivery	61
Annex I: Sample terms of reference – national AMS technical working group	63
Annex II: Sample terms of reference – health-care facility AMS committee	64
Annex III: Sample terms of reference – health-care facility AMS team	66
Annex IV: Sample AMS review form	67
Annex V: Sample pre-authorization/restricted prescribing form	68
Annex VI: Sample medical chart	69
Annex VII: Sample bug-drug chart	70
Annex VIII: Sample cumulative antibiogram for gram-negative bacteria	71

## LIST OF FIGURES, TABLES AND BOXES

Figure 1.	Integrated approach to optimizing use of antimicrobials towards universal health coverage . . . . .	2
Figure 2.	National (state/regional) core elements for AMS programmes in LMICs . . . . .	6
Figure 3.	Guide to navigating the national core elements checklist to identify, prioritize and develop a stepwise implementation plan over the short and medium/long term . . . . .	7
Figure 4.	Health-care facility core elements for AMS programmes in LMICs . . . . .	12
Figure 5.	Guide to navigating the health-care facility core elements checklist to identify, prioritize and develop a stepwise implementation plan over the short and medium/long term . . . . .	13
Figure 6.	Example of a SWOT analysis for AMS readiness in a health-care facility . . . . .	19
Figure 7.	Example of an AMS governance structure for health-care facilities in LMICs . . . . .	21
Figure 8.	Links between IPC and AMS in delivering quality health care and optimizing antibiotic use . . . . .	23
Figure 9.	Linkage of AMS and the IPC core components . . . . .	23
Figure 10.	Pharmaceutical value chain indicating potential data sources for surveillance of antimicrobial consumption and use . . . . .	24
Figure 11.	Overview of the WHO AWaRe groups and essential antibiotics on the WHO EML . . . . .	27
Figure 12.	Proportional consumption (%) of antibiotics by AWaRe classification in six countries of the Western Pacific Region, 2015 . . . . .	28
Figure 13.	Questions to address when applying the quality improvement model for AMS interventions . . . . .	33
Figure 14.	The quality-improvement model following the continuous improvement cycle: Plan, Do, Study, Adjust . . . . .	33
Figure 15.	The quality-improvement model in more detail . . . . .	34
Figure 16.	Appropriate antibiotic surgical prophylaxis – indication, and prescribe and stop prophylaxis . . . . .	36
Figure 17.	Structural, process and outcome measures for assessing AMS programmes . . . . .	48
Figure 18.	Education and training delivery modes for AMS-related competencies . . . . .	59
Table 1.	WHO toolkit for AMS programmes in health-care facilities in LMICs. . . . .	3
Table 2.	Checklist of essential national* core elements for AMS programmes in LMICs – basic (white) and advanced (grey) core elements . . . . .	8
Table 3.	Indicators from the Tripartite M&E framework for the Global Action Plan on AMR relevant to AMS programmes. . . . .	10
Table 4.	Checklist of essential health-care facility core elements for AMS programmes in LMICs – basic (white) and advanced (grey) core elements . . . . .	14
Table 5.	Preparation for developing and implementing an AMS programme in a health-care facility . . . . .	18
Table 6.	Nine common areas for improving antibiotic prescribing . . . . .	32
Table 7.	Types of AMS interventions for improving antibiotic prescribing practices. . . . .	37
Table 8.	Comprehensive list of AMS interventions for improving antibiotic prescribing practices . . . . .	38
Table 9.	Areas where IT can benefit AMS interventions. . . . .	46
Table 10.	Outcome measures/indicators related to antimicrobial use . . . . .	50

Table 11.	Outcome measures/ indicators related to patients and microbiology. ....	51
Table 12.	Process measures/indicators of antimicrobial use .....	52
Table 13.	Competencies for HCWs involved in AMS programmes in health-care facilities in LMICs .....	55
Table 14.	Teaching methods for AMS interventions .....	61
Box 1.	Key steps in establishing a national AMS programme to enable facility AMS .....	3
Box 2.	Key steps to establishing a health-care facility AMS programme. ....	4
Box 3.	Case study: How a facility outbreak underpinned the establishment of facility AMS in Barbados .....	4
Box 4.	Core components of IPC and the link to AMS .....	23
Box 5.	Step-by-step guide for setting up an AMC surveillance programme at the facility level. ....	25
Box 6.	Step-by-step guide for setting up a health-care facility PPS .....	26
Box 7.	Snapshot of GLASS. ....	29
Box 8.	Basic AMS interventions .....	35
Box 9.	Core steps for implementing an educational programme .....	60

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\\_24993](https://www.yunbaogao.cn/report/index/report?reportId=5_24993)

