Resource materials for in-country development and implementation of national action plans to address antimicrobial resistance

2024 UPDATE
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## What’s new in the AMR Resource Pack 2024 update

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<td>• Health and economic impacts of antimicrobial resistance in the Western Pacific Region, 2020-2030 (who.int)</td>
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<td>• GLASS manual for antimicrobial resistance surveillance in common bacteria causing human infection (who.int)</td>
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<td>• Antimicrobial resistance surveillance in Europe 2023 – 2021 data <a href="https://www.who.int/europe/publications/i/item/9789289058537">https://www.who.int/europe/publications/i/item/9789289058537</a></td>
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<td><strong>AMR national action plan implementation resources</strong></td>
<td>• People-centred approach to addressing antimicrobial resistance in human health: WHO core package of interventions to support national action plans [People-centred approach to addressing antimicrobial resistance in human health (who.int)]</td>
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<td>• WHO AMR NAP costing &amp; budgeting tool now available in SP and FR</td>
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<td>• Mali national action plan on antimicrobial resistance: review of progress in the human health sector [EN, FR]</td>
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<td>• Kenya national action plan on antimicrobial resistance: review of progress in the human health sector [who.int]</td>
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<td><strong>Infection prevention and control</strong></td>
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<td>• WHO Global report on infection prevention and control: executive summary [EN, FR]</td>
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<td>• E-learning course <a href="https://openwho.org">Infection Prevention and Control in Maternal and Neonatal Care</a></td>
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<td>• <a href="https://5mgame.lxp.academy.who.int/">My 5 Moments for Hand Hygiene game</a></td>
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<td>• New IPC in primary care section</td>
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<td><strong>Water, sanitation &amp; hygiene</strong></td>
<td>• [A field guide to improving small drinking-water supplies: water safety planning for rural communities (who.int)]</td>
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<td>• Water, sanitation and hygiene in health-care facilities: a practical tool for situation assessment and improvement planning [Water, sanitation and hygiene in health-care facilities: a practical tool for situation assessment and improvement planning (who.int)]</td>
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<td>• Countries Posters from the Global Summit on WASH and Waste in Healthcare Facilities June 2023 <a href="washinhcf.org">All-countries-posters-in-Global-Summit-.pdf</a></td>
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<td><strong>Immunization</strong></td>
<td>• [Global and regional burden of attributable and associated bacterial antimicrobial resistance avertable by vaccination: modelling study (bmj.com)]</td>
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<td>• WHO repository of recommendations for use of vaccines: <a href="https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers">https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers</a></td>
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| AMR & essential medicines and products | WHO Model List of Essential Medicines - 23rd list, 2023 [WHO Model List of Essential Medicines - 23rd list, 2023](https://apps.who.int/iris/handle/10665/365237)  
WHO Model List of Essential Medicines for children – 9th list, 2023 [WHO EMLc 9th List (2023)](https://apps.who.int/iris/handle/10665/365135)  
The selection and use of essential in vitro diagnostics: report of the fourth meeting of the WHO Strategic Advisory Group of Experts on In Vitro Diagnostics, 2022 (including the fourth WHO model list of essential in vitro diagnostics) [https://www.who.int/publications/i/item/WHO-MHP-RPQ-REG-2022.01](https://www.who.int/publications/i/item/WHO-MHP-RPQ-REG-2022.01)  
The WHO Member State mechanism on substandard and falsified medical products  
WHO global surveillance and monitoring system: Substandard and Falsified medical products [https://www.who.int/publications/i/item/9789241513425](https://www.who.int/publications/i/item/9789241513425) |
| AMR & essential medicines and products | Training on substandard/falsified (SF) medical products, Module 1: Introduction & overview  
Training on substandard/falsified (SF) medical products, Module 2: Responding to incidents |
| Antimicrobial stewardship | The WHO AWARe (access, watch, reserve) antibiotic book: [https://apps.who.int/iris/handle/10665/365237](https://apps.who.int/iris/handle/10665/365237)  
Infographics: [https://apps.who.int/iris/handle/10665/365135](https://apps.who.int/iris/handle/10665/365135)  
Mobile App : [WHO AWARe Antibiotic Book (firstline.org)](https://apps.who.int/iris/handle/10665/365237)  
AWARe classification of antibiotics for evaluation and monitoring of use, 2023 [who.int](https://apps.who.int/iris/handle/10665/365237) |
| Monitoring | TrACSS 2023 results  
TrACSS 2022 country reports  
Guidance to facilitate monitoring and evaluation for antimicrobial resistance national action plans [who.int](https://apps.who.int/iris/handle/10665/365237) |
| One Health | Animal Health and Welfare and Antimicrobial Resistance and Use [amrleaders.org](https://www.who.int/publications/i/item/9789240057685-eng.pdf?sequence=1)  
Implementation of WOAH standards: the Observatory Annual Report, First edition 2022  
The Lancet Series on One Health and Global Health Security  
1st Global Joint Summit of Human and Veterinary Medicines Regulatory Authorities to Preserve Antimicrobials [Summit Report](https://apps.who.int/iris/handle/10665/363475/9789240057685-eng.pdf?sequence=1)  
| Research (new section) | WHO fungal priority pathogens list to guide research, development and public health action [https://www.who.int/publications/i/item/9789240060241](https://www.who.int/publications/i/item/9789240060241)  
Global research agenda for antimicrobial resistance in human health [Global research agenda for antimicrobial resistance in human health (who.int)](https://apps.who.int/iris/handle/10665/370279)  
A one health priority research agenda for antimicrobial resistance. 2023 [https://apps.who.int/iris/handle/10665/370279](https://apps.who.int/iris/handle/10665/370279) |
| IHR/Pandemic preparedness | Responding to outbreaks of antimicrobial-resistant pathogens in health-care facilities: guidance for the Western Pacific region [who.int](https://apps.who.int/iris/handle/10665/370279) |

**Acknowledgements:** We gratefully acknowledge the contributions of WHO headquarters technical teams and WHO regional AMR focal points.
1. General AMR resources

- **Antimicrobial resistance (who.int)** Fact Sheet (updated 2023)
- Global action plan on antimicrobial resistance [https://www.who.int/publications/i/item/9789241509763](https://www.who.int/publications/i/item/9789241509763)
  - Animation: [https://www.youtube.com/watch?v=xyv_QroYZM](https://www.youtube.com/watch?v=xyv_QroYZM)
  - Social media graphics: [https://cloud.ihme.washington.edu/s/6M2fNj3raArEFMX](https://cloud.ihme.washington.edu/s/6M2fNj3raArEFMX)
  - GRAM report launch video, [https://vimeo.com/675487510](https://vimeo.com/675487510)
- A pocket guide for ministers across sectors: How to respond to antimicrobial resistance [A pocket guide for ministers across sectors (amrleaders.org)](https://amrleaders.org)
- WHO antimicrobial resistance webpage (also in Arabic, Chinese, French, Russian & Spanish) [https://www.who.int/health-topics/antimicrobial-resistance](https://www.who.int/health-topics/antimicrobial-resistance)
- Financing to Address Antimicrobial Resistance - Information note of the Global Leaders Group on Antimicrobial Resistance [https://www.amrleaders.org/resources/m/item/financing-to-address-antimicrobial-resistance](https://www.amrleaders.org/resources/m/item/financing-to-address-antimicrobial-resistance)
- [Health and economic impacts of antimicrobial resistance in the Western Pacific Region, 2020-2030 (who.int)](https://www.who.int)

2. AMR National action plan implementation resources

- WHO AMR community exchange platform: [https://amrcommunityexchange.org/](https://amrcommunityexchange.org/)
- Antimicrobial resistance: [A manual for developing national action plans](https://www.who.int)
• WHO implementation handbook for national action plans on antimicrobial resistance: guidance for the human health sector. (AR, CH, EN, FR, RU, SP).  https://www.who.int/publications/i/item/9789240041981
  o eLearning course: https://openwho.org/courses/AMR-NAP-6steps-for-implementation
  o Infographic : 6 steps for sustainable implementation of national action plans on antimicrobial resistance.  https://www.who.int/multi-media/details/6-steps-for-sustainable-implementation-of-national-action-plans-on-antimicrobial-resistance

• WHO costing and budgeting tool for national action plans on antimicrobial resistance
  o WHO AMR Costing and Budgeting Tool  (EN, FR, SP)
  o WHO costing and budgeting tool for national action plans on antimicrobial resistance: user guide (EN, FR, SP)
  o eLearning course https://openwho.org/courses/AMR-NAP-costing-tool

• Kenya national action plan on antimicrobial resistance: review of progress in the human health sector (who.int)

• Mali national action plan on antimicrobial resistance: review of progress in the human health sector (EN, FR) https://www.who.int/publications/i/item/9789240065468

• Burkina Faso national action plan on antimicrobial resistance: review of progress in the human health sector. (EN, FR) https://www.who.int/publications/i/item/9789240040410

• Malawi national action plan on antimicrobial resistance: review of progress in the human health sector. https://www.who.int/publications/i/item/9789240056848


• Turning plans into action for antimicrobial resistance (AMR). Working Paper 2.0: Implementation and coordination https://apps.who.int/iris/handle/10665/311386

• Thematic brief: Multisectoral action to tackle AMR  https://apps.who.int/iris/handle/10665/346539

• Tackling antimicrobial resistance (AMR) together. Working Paper 5.0: Enhancing the focus on gender and equity  https://apps.who.int/iris/handle/10665/336977
3. Health workforce AMR education resources

- OpenWHO: New Antimicrobial Resistance channel [Antimicrobial Resistance (openwho.org)]
- Online course: Reducing AMR of curable Sexually Transmitted Infections (STIs) in Antenatal Care (ANC) settings [https://openwho.org/courses/amr-sti-anc]
- Online course: Surgical site infections. [https://openwho.org/courses/IPC-SSI-EN]
- Online course: WHO Policy Guidance on Integrated Antimicrobial Stewardship Activities. [https://openwho.org/courses/policy-guidance-on-AMS]
- Online course: WHO practical toolkit for antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries. [https://openwho.org/courses/practical-toolkit-for-AMS]
- WHO EURO Antimicrobial Stewardship: A competency-based approach Open Online Course (EN, FR, IT, Macedonian, RU, SP). [https://openwho.org/courses/AMR-competency]
- Antimicrobial stewardship interventions: a practical guide. WHO Regional Office for Europe 2021, (EN,RU, POL, GEO, TUR, SP, CRO, FR) [https://apps.who.int/iris/bitstream/handle/10665/340709/9789289054980-eng.pdf]
- Responding to Outbreaks of Antimicrobial-resistant Pathogens in Health-care Facilities: Guidance for the Western Pacific Region (EN, CHN) [https://apps.who.int/iris/handle/10665/363498]

4. Awareness, communications and behaviour change

- World AMR Awareness Week [World AMR Awareness Week (who.int)]
- AMR Quiz - WHO/Europe - RC73 (EN, GER, RU) [No time to wait (who.int)]
- Trello board for Quadripartite WAAW resources [https://trello.com/b/tBoXeVae/world-amr-awareness-week-toolkit-fao-unep-who-woah]
- WAAW materials (for GPs and leaflet) (EN, RU) [https://who.canto.global/v/LI33QQ5N04/album/S08B9?viewIndex=0]
• The TAP manual: an in-depth guide for planning and implementing tailoring antimicrobial resistance programmes  
  https://apps.who.int/iris/handle/10665/363136

• Tailoring Antimicrobial Resistance programmes (TAP) Quick Guide  
  https://apps.who.int/iris/handle/10665/341631, EN, SP, GRE, FR, RUS, GER  
  ○ Spanish: https://iris.paho.org/handle/10665.2/55628

• Tailoring Antimicrobial Resistance programmes (TAP) Toolbox  
  https://apps.who.int/iris/handle/10665/341632; (EN, RU, GRE, GER, FR, SP)  
  ○ SP: https://iris.paho.org/handle/10665.2/55629

• Tailoring Antimicrobial Resistance programmes (TAP) Process Poster  
  https://who.canto.global/v/I6NL4P771P/album/IB2K9?viewIndex=0; (EN, RU, GRE, GER, FR)  
  ○ https://iris.paho.org/handle/10665.2/55627

• Handbook for Communication on the Rational Use of Antimicrobials for the Containment of Resistance (ENG, SP)  
  https://iris.paho.org/handle/10665.2/54995

• Africa Regional Strategy on Antimicrobial Resistance Communications and Advocacy (fao.org) (EN, FR)  

• Wellcome Trust. Toolkit on communicating Antimicrobial Resistance  
  https://wellcome.ac.uk/reports/reframing-antimicrobial-resistance-antibiotic-resistance

  https://gh.bmj.com/content/4/3/e001239.long

• The fight against Antimicrobial Resistance is significant for cancer prevention and treatment , EN,RU  
  https://apps.who.int/iris/handle/10665/337511

• Stop the COVID-19 pandemic from becoming an AMR catastrophe (EN, RU)  
  https://apps.who.int/iris/handle/10665/337513

• The fight against Antimicrobial Resistance with Evidence-informed policy-making (EN, RU)  
  https://apps.who.int/iris/handle/10665/337527

• Food Safety and the fight against Antimicrobial Resistance (EN, RU)  
  https://apps.who.int/iris/handle/10665/337525

• Immunization strengthens the fight against Antimicrobial Resistance (EN, RU)  
  https://apps.who.int/iris/handle/10665/337523

• The fight against Antimicrobial Resistance supports efforts towards Better Labs for Better Health (EN, RU)  
  https://apps.who.int/iris/handle/10665/337515

• The fight against Antimicrobial Resistance supports migrant health (EN, RU)  
  https://apps.who.int/iris/handle/10665/337521
The fight against Antimicrobial Resistance is closely linked to the Sustainable Development Goals (EN, RU) https://apps.who.int/iris/handle/10665/337519

Bacteria can make us ill. Antibiotics then (usually) help (EN, RU) https://apps.who.int/iris/handle/10665/337517

Tuberculosis and the fight against Antimicrobial Resistance (EN, RU) https://apps.who.int/iris/handle/10665/352460

Behavioural and Cultural Insights and the fight against Antimicrobial Resistance (EN, RU) https://apps.who.int/iris/handle/10665/352458

The fight against Antimicrobial Resistance requires a focus on gender (EN, RU) https://apps.who.int/iris/handle/10665/352456

The fight against Antimicrobial Resistance requires a focus on the health workforce (EN, RU) https://apps.who.int/iris/handle/10665/359109

The fight against Antimicrobial Resistance supports efforts towards Child and Adolescent Health (EN, RU) https://apps.who.int/iris/handle/10665/359106

5. Surveillance resources

a) Antimicrobial resistance surveillance


Global antimicrobial resistance surveillance system (GLASS) reports – all reports. GLASS Resource Centre (who.int)

GLASS manual for antimicrobial resistance surveillance in common bacteria causing human infection (who.int)

Methodological principles of nationally representative surveys as a platform for global surveillance of antimicrobial resistance in human bloodstream infections https://www.who.int/publications/i/item/9789240067004

Antimicrobial Resistance in the WHO African Region: a systematic literature review https://apps.who.int/iris/handle/10665/349223

Antimicrobial resistance surveillance in Europe 2023 – 2021 data https://www.who.int/europe/publications/i/item/9789289058537
• GLASS whole-genome sequencing for surveillance of antimicrobial resistance. Sept 2020
  https://www.who.int/publications/i/item/9789240011007

• GLASS guidance for national reference laboratories. Sept 2020
  https://www.who.int/publications/i/item/9789240010581

• GLASS method for estimating attributable mortality of antimicrobial resistant bloodstream infections.
  https://www.who.int/publications/i/item/9789240000650

• WHO integrated global surveillance on ESBL-producing E. coli using a “One Health” approach. Implementation and opportunities: 2021
  https://www.who.int/publications/i/item/9789240021402

• National antimicrobial resistance surveillance systems and participation in the Global Antimicrobial Resistance Surveillance System (GLASS): A guide to planning, implementation, and monitoring and evaluation
  http://apps.who.int/iris/bitstream/10665/251554/1/WHO-DGO-AMR-2016.4-eng.pdf?ua=1

• Diagnostic stewardship: A guide to implementation in antimicrobial resistance surveillance sites
  http://apps.who.int/iris/bitstream/10665/251553/1/WHO-DGO-AMR-2016.3-eng.pdf?ua=1

• Emerging antimicrobial resistance reporting framework (GLASS-EAR).
  https://www.who.int/publications/i/item/9789241514590

• The detection and reporting of colistin resistance. 2nd edition: 2021
  https://apps.who.int/iris/bitstream/handle/10665/343654/9789240019041-eng.pdf

• Proof-of-principle antimicrobial resistance routine diagnostics surveillance project (PoP project): protocol: version 2.0:
  https://apps.who.int/iris/handle/10665/346076


• Global Antimicrobial Resistance Surveillance System (GLASS) early implementation protocol for the inclusion of *Candida* spp. (EN, SP).
  https://www.who.int/publications/i/item/WHO-WSI-AMR-2019.4

• GLASS Resource Centre https://www.who.int/initiatives/glass/resource-centre

• Central Asian and European Surveillance of Antimicrobial Resistance CAESAR Manual Version 3, 2019 (EN, RU)
  https://apps.who.int/iris/handle/10665/346572

• Surveillance of Antimicrobial Resistance and Use - Information note of the Global Leaders Group on Antimicrobial Resistance
  ○ https://www.amrleaders.org/resources/m/item/surveillance-of-antimicrobial-resistance-and-use

• Surveillance of Bacterial Pneumonia and Meningitis in Children Aged Under 5 Years: Field Guide, 2nd ed., PAHO:
  https://iris.paho.org/handle/10665.2/54637
b) Antimicrobial consumption surveillance

- Global Antimicrobial Resistance and Use Surveillance System (GLASS) Dashboard: Global AMC data [WHO GLASS Dashboard (shinyapps.io)]
- Training on GLASS methodology for national surveillance of antimicrobial consumption. World Health Organization 2022. [https://apps.who.int/iris/handle/10665/354258]
- GLASS methodology for surveillance of national antimicrobial consumption, World Health Organization; 2020 [EN, FR] [https://www.who.int/publications/i/item/9789240012639]
- GLASS manual on the management of antimicrobial consumption data, World Health Organization; 2020 [EN, FR] [https://www.who.int/publications/i/item/9789240010192]
- GLASS guide for national surveillance systems for monitoring antimicrobial consumption in hospitals, World Health Organization; 2020 [EN, FR, POR, RU, SP] [https://apps.who.int/iris/handle/10665/336182]
- Antimicrobial consumption in the WHO Western Pacific Region: early implementation of the Western Pacific Regional Antimicrobial Consumption Surveillance System (WPRACSS) (2022): [https://www.who.int/publications/i/item/9789290619543](https://www.who.int/publications/i/item/9789290619543)
- WHO Collaborating Centre for Drug Statistics Methodology: ATC/DDD Index 2023 [https://www.whocc.no/atc_ddd_index/](https://www.whocc.no/atc_ddd_index/)
- Introduction to drug utilization research [EN, RU] [https://apps.who.int/iris/handle/10665/42627](https://apps.who.int/iris/handle/10665/42627)
• Assessing non-prescription and inappropriate use of antibiotics (2019)  
  https://apps.who.int/iris/handle/10665/312306

6. Research

• WHO fungal priority pathogens list to guide research, development and public health action. 2022  
  https://www.who.int/publications/i/item/9789240060241

• Global research agenda for antimicrobial resistance in human health. 2023  
  https://www.who.int/publications/i/item/global-research-agenda-for-antimicrobial-resistance-in-human-health

• A one health priority research agenda for antimicrobial resistance. 2023  
  https://apps.who.int/iris/handle/10665/370279

7. WHO laboratory strengthening tools

a) National policy and strategy

• Development of National Laboratory Policies: Best practices document and facilitators’ guide (EN, RU):  
  https://apps.who.int/iris/handle/10665/355631

• Developing a national laboratory strategic plan: Best practices document and facilitators’ guide (EN, RU):  
  https://apps.who.int/iris/handle/10665/353746

b) Quality management and assurance

• Laboratory quality management system: handbook (FR, RU, SP).  
  https://www.who.int/publications/i/item/9789241548274

• Quality Manual template (EN, FR, RU, SP)  
  https://www.who.int/publications/m/item/laboratory-quality-manual

• Quality assurance in bacteriology and immunology, 3rd ed., SEARO:  
  https://apps.who.int/iris/handle/10665/205730

• LQMS training toolkit (EN, FR, RU)  
  https://extranet.who.int/hspl/content/LQMS-training-toolkit

• Laboratory Quality Stepwise Implementation tool (FR, RU, SP, Turkish).  
  https://extranet.who.int/lqsi/
c) **Biosafety**

- Laboratory Biosafety Manual, 4th edition
  https://www.who.int/publications/i/item/9789240011311

- Tuberculosis laboratory biosafety manual, WHO:
  https://www.who.int/publications/i/item/9789241504638

d) **Tools and guidance**

- Laboratory Assessment Tool
  2 tools: 1 to assess the system, 1 to assess the facility. (FR, RU, SP)
  https://www.who.int/publications/i/item/WHO-HSE-GCR-LYO-2012.2

- Manual of basic techniques for a health laboratory, 2nd ed, WHO:
  https://apps.who.int/iris/handle/10665/42295

- Maintenance manual for laboratory equipment, 2nd ed., WHO:
  https://www.who.int/publications/i/item/9789241596350

- Manual for the Laboratory Identification and Antimicrobial Susceptibility Testing of Bacterial Pathogens of Public Health Importance in the Developing World, WHO, CDC, USAID:
  https://apps.who.int/iris/handle/10665/68554

- Laboratory methods for the diagnosis of meningitis caused by Neisseria meningitidis, Streptococcus pneumoniae, and Haemophilus influenzae: WHO manual, 2nd ed:
  https://apps.who.int/iris/handle/10665/70765

- Microbiología: lo esencial y lo práctico, PAHO: https://iris.paho.org/handle/10665.2/51601

- Basic laboratory procedures in clinical bacteriology, 2nd ed. WHO:
  https://apps.who.int/iris/handle/10665/42696

- Guidelines on standard operating procedures for microbiology, SEARO:
  https://apps.who.int/iris/handle/10665/205200

- Laboratory diagnosis of sexually transmitted infections, including human immunodeficiency virus, WHO:
  https://apps.who.int/iris/rest/bitstreams/304701/retrieve

- Specimen collection and transport for microbiological investigation, EMRO:
  https://apps.who.int/iris/handle/10665/119529

- WHO laboratory manual for the diagnosis of diphtheria and other related infections:
  https://apps.who.int/iris/handle/10665/352275

- Laboratory manual for diagnosis of fungal opportunistic infections in HIV/AIDS patients, SEARO:
  https://apps.who.int/iris/handle/10665/205404

- Diagnostic stewardship: a guide to implementation in antimicrobial resistance surveillance sites:
  https://www.who.int/publications/i/item/WHO-DGO-AMR-2016.3
8. Prevention of Infection

a) Infection prevention and control (IPC) resources

WHO IPC home page [https://www.who.int/teams/integrated-health-services/infection-prevention-control](https://www.who.int/teams/integrated-health-services/infection-prevention-control)

This page provides resources on

- Hand hygiene
- Core components
- AMR
- Surgical site infection
- Injection safety
- Sepsis
- Basic IPC and primary care

Newest publications are highlighted on this page

- [WHO Global Strategy for Infection Prevention and Control](https://www.who.int/publications/i/item/9789240019720)
- [E-learning courses](https://openwho.org/channels/ipc) are found on the IPC channel on OpenWHO.
- [Global report on infection prevention and control](https://www.who.int/publications/i/item/9789240011007)
- [WHO Global report on infection prevention and control: executive summary](https://www.who.int/publications/i/item/9789240010581) (EN, FR)
• Understanding accelerators and overcoming barriers - the journey for developing or adapting an infection prevention and control guideline, [https://www.who.int/europe/publications/m/item/understanding-accelerators-and-overcoming-barriers---the-journey-for-developing-or-adapting-an-infection-prevention-and-control-guideline---an-easy-to-follow-country-approach](https://www.who.int/europe/publications/m/item/understanding-accelerators-and-overcoming-barriers---the-journey-for-developing-or-adapting-an-infection-prevention-and-control-guideline---an-easy-to-follow-country-approach)


**IPC and antimicrobial resistance (AMR) page** [Infection prevention and control (who.int)]

Key documents on this page include:


• Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level. [https://apps.who.int/iris/bitstream/handle/10665/312226/WHO-UHC-SDS-2019.6-eng.pdf?ua=1](https://apps.who.int/iris/bitstream/handle/10665/312226/WHO-UHC-SDS-2019.6-eng.pdf?ua=1)

Of interest related to this topic are the following courses on OpenWHO:

• Catheter-associated urinary tract infections [https://openwho.org/courses/IPC-CAUTI-EN](https://openwho.org/courses/IPC-CAUTI-EN) and

• Bloodstream infections [https://openwho.org/courses/BSI-EN](https://openwho.org/courses/BSI-EN)

**Hand Hygiene**

Tabs on this page for Guidelines and evidence, Implementation tools, Training tools and Monitoring tools. You will also find an alcohol-based handrub planning and costing tool, leaflets on glove use, multimodal improvement and tools for creating an institutional safety climate.

OpenWHO online course, Standard precautions: Hand hygiene: [https://openwho.org/courses/IPC-HH-en](https://openwho.org/courses/IPC-HH-en)

My 5 Moments for Hand Hygiene game: [https://5mgame.lxp.academy.who.int/](https://5mgame.lxp.academy.who.int/)

**Guidelines and evidence**

• [WHO guidelines on hand hygiene in health care](https://www.who.int/publications/i/item/9789241503372)

• Hand hygiene in outpatient and home-based and long-term care facilities: a guide to the application of the WHO multimodal hand hygiene improvement strategy and the “My Five Moments for Hand Hygiene” approach [https://www.who.int/publications/i/item/9789241503372](https://www.who.int/publications/i/item/9789241503372)
Implementation Tools

- A guide to the implementation of the WHO multimodal hand hygiene improvement strategy https://www.who.int/publications/i/item/a-guide-to-the-implementation-of-the-who-multimodal-hand-hygiene-improvement-strategy
- Hand hygiene for all initiative: improving access and behavior in health care facilities https://www.who.int/publications/i/item/9789240011618

Training tools At this tab, you will find training and education resources on the importance of hand hygiene, the "My 5 Moments for Hand Hygiene" approach and the correct procedures for handrubbing and handwashing.

Monitoring tools - resources to support evaluation of hand hygiene practices among health-care workers.

IPC Core Components

- WHO Minimum requirements for infection prevention and control programmes https://www.who.int/publications/i/item/9789241516945
- WHO Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level (also available for download in Spanish). https://www.who.int/publications/i/item/9789241549929

There are several courses on the IPC channel of OpenWHO accessible here: https://openwho.org/channels/ipc. Of specific interest on the topic of core components is IPC core components and multimodal strategies: https://openwho.org/courses/IPC-CC-MMIS-EN

Surgical Site Infection

Here you will find guidelines as well as implementation resources, training tools, and monitoring tools for the prevention of SSIs, including the following key publications:

- Global guidelines for the prevention of surgical site infection
- Implementation manual to support the prevention of surgical site infections at the facility level: turning recommendations into practice https://www.who.int/publications/i/item/WHO-HIS-SDS-2018-18
- Decontamination and reprocessing of medical devices for health-care facilities https://www.who.int/publications/i/item/9789241549851
• The Surgical site infections online course is also available on OpenWHO Surgical site infections | OpenWHO

Injection safety

Several injection safety resources are available here, including guidelines, a toolkit, videos and leaflets.

OpenWHO online course, Standard precautions: Injection safety and needle-stick injury management (EN, RU)
https://openwho.org/courses/IPC-IS-EN

Sepsis

There are several links to relevant sepsis resources available here, including the Global report on the epidemiology and burden of sepsis https://www.who.int/publications/i/item/9789240010789

Primary Care

• New website for Basic IPC and primary care: https://www.who.int/teams/integrated-health-services/infection-prevention-control/basic-ipc-and-primary-care
• Strengthening infection prevention and control in primary care: A collection of existing standards, measurement and implementation resources https://www.who.int/publications/i/item/9789240035249
• Surgical site infection prevention in the primary health care setting https://www.who.int/multimedia/details/surgical-site-infection-prevention-in-the-primary-health-care-setting

Monitoring/Assessment tools

• National infection Prevention and Control Assessment tool 2 (IPCAT2), https://iris.who.int/handle/10665/330078
• Infection Prevention and Control Assessment Framework (IPCAF), https://apps.who.int/iris/handle/10665/330072
• Assessment tool of the minimum requirements for infection prevention and control programmes at the national level, https://www.who.int/publications/m/item/assessment-tool-of-the-minimum-requirements-for-infection-prevention-and-control-programmes-at-the-national-level
• Assessment tool on IPC minimum requirements for primary health care facilities, https://www.who.int/publications/i/item/WHO-UHL-IHS-IPC-2023.2
• International Health Regulations (2005): state party self-assessment annual reporting tool, 2nd ed. 9789240040120-eng.pdf (who.int)

Additional IPC and AMR resources:

• Environmental cleaning and infection prevention and control in health care facilities in low- and middle-income countries, 2023
  o Trainers guide https://www.who.int/publications/i/item/9789240051041
  o Modules and resources https://www.who.int/publications/i/item/9789240051065

• Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level, https://apps.who.int/iris/handle/10665/345251

• Responding to Outbreaks of Antimicrobial-resistant Pathogens in Health-care Facilities: Guidance for the Western Pacific Region https://apps.who.int/iris/handle/10665/363498

• Responding to Outbreaks of Antimicrobial-resistant Pathogens in Health-care Facilities: Guidance for the Western Pacific Region (EN, CHN) https://apps.who.int/iris/handle/10665/363498

• Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the health care facility level, https://apps.who.int/iris/handle/10665/361522

• IPC for AMR advocacy document: The essential role of IPC to curb AMR, aimed at health policy decision-makers https://cdn.who.int/media/docs/default-source/integrated-health-services-(ihs)/amr/ipc_amr_a4.pdf?sfvrsn=ede4a5cd_7


• OpenWHO  IPC channel https://openwho.org/channels/ipc
b) Water, sanitation & hygiene (WASH) resources

Webpages

- WHO Water sanitation hygiene webpage: https://www.who.int/health-topics/water-sanitation-and-hygiene-wash
- WASHFIT portal. https://washhcf.org/wash-fit/

Standards and guidelines

- WHO 2018. Guidelines on sanitation and health (AR, EN, FR, RU, SP) https://www.who.int/publications/i/item/9789241514705
- Overview of technologies for the treatment of infectious and sharp waste from health care facilities (AR, EN, FR, SP) https://www.who.int/publications/i/item/9789241516228

Monitoring

- WHO/UNICEF 2023 Water, sanitation, hygiene, waste and electricity services in health care facilities: progress on the fundamentals https://www.who.int/publications/i/item/9789240075085

Tools

- WASH FIT Fact Sheets | WASH in Health Care Facilities (washinhcf.org)
- A field guide to improving small drinking-water supplies: water safety planning for rural communities (who.int) (EN, RU)
- Water, sanitation and hygiene in health-care facilities: a practical tool for situation assessment and improvement planning (who.int) (EN, RU)
• Countries Posters from the Global Summit on WASH and Waste in Healthcare Facilities  June 2023 All-countries-posters-in-Global-Summit-.pdf (washinhcf.org)

• WHO/UNICEF/WaterAid 2020. COMBATTING ANTIMICROBIAL RESISTANCE through WATER, SANITATION AND HYGIENE and INFECTION PREVENTION AND CONTROL in HEALTH CARE. Infographic highlighting the benefits of combined efforts https://www.who.int/docs/default-source/wash-documents/wash-in-hcf/combatting-antimicrobial-resistance.pdf?sfvrsn=cbca673f_4


• WHO/UNICEF Water, sanitation, and hygiene in health care facilities: Practical steps to achieve universal access for quality care, 2019 (EN, FR, RU, SP). https://www.who.int/publications-detail-redirec/9789241515511

c) Immunization resources

• Global and regional burden of attributable and associated bacterial antimicrobial resistance avertable by vaccination: modelling study Global and regional burden of attributable and associated bacterial antimicrobial resistance avertable by vaccination: modelling study (bmj.com)

• WHO/UNICEF estimates of national immunization coverage: https://worldhealthorg.shinyapps.io/wuenic-trends-2023/

• Bacterial vaccines in clinical and preclinical development 2021. https://www.who.int/publications/i/item/9789240052451


• Immunization Agenda 2030. https://www.immunizationagenda2030.org/

• WHO Immunization dashboard. https://immunizationdata.who.int/

• WHO. (2019). Intervention guidebook for implementing and monitoring activities to reduce missed opportunities for vaccination. https://www.who.int/publications/i/item/9789241516310

• WHO repository of recommendations for use of vaccines: https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers

9. Optimize the use of antimicrobial medicines

a) Antimicrobial selection

• WHO Model List of Essential Medicines - 23rd list, 2023 WHO Model List of Essential Medicines - 23rd list, 2023
WHO Model List of Essential Medicines for children – 9th list, 2023 [WHO EMLc 9th List (2023)]


Exposure to World Health Organization’s AWaRe antibiotics and isolation of multidrug resistant bacteria: a systematic review and meta-analysis. [https://www.sciencedirect.com/science/article/pii/S1198743X22001537]

b) Antimicrobial stewardship

- The WHO AWaRe (access, watch, reserve) antibiotic book: [https://apps.who.int/iris/handle/10665/365237]
- Infographics: [https://apps.who.int/iris/handle/10665/365135]
- Mobile App: WHO AWaRe Antibiotic Book ([firstline.org])
- AWaRe classification of antibiotics for evaluation and monitoring of use, 2023 ([who.int])
- WHO’s AWaRe Framework [WHO Antibiotics Portal (essentialmeds.org)]
- WHO policy guidance on integrated antimicrobial stewardship activities (2021) [https://www.who.int/publications/i/item/9789240025530]
- Online course: WHO Policy Guidance on Integrated Antimicrobial Stewardship Activities. [https://openwho.org/courses/policy-guidance-on-AMS]
- Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries: a WHO practical toolkit. WHO 2019. (AR, EN, FR, RU, SP) [https://www.who.int/publications/i/item/9789241515481]
- Online course: WHO practical toolkit for antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries. [https://openwho.org/courses/practical-toolkit-for-AMS]
- Virtual Antimicrobial Stewardship Escape Room Game [https://www.biomerieuxer.com]
- Antimicrobial stewardship interventions: a practical guide. WHO Regional Office for Europe 2021 [https://apps.who.int/iris/bitstream/handle/10665/340709/9789289054980-eng.pdf]
• WHO EURO online course “Antimicrobial Stewardship: A competency-based approach” (EN, FR, IT, RU, SP) [https://openwho.org/courses/AMR-competency.](https://openwho.org/courses/AMR-competency)


• WHO Regional Office for Europe. Assessing non-prescription and inappropriate use of antibiotics (2019) [https://apps.who.int/iris/handle/10665/312306](https://apps.who.int/iris/handle/10665/312306)

• EVIPNet evidence brief for policy: tackling antimicrobial resistance in primary health care through promoting the appropriate use of antibiotics Estonia [https://apps.who.int/iris/handle/10665/351528](https://apps.who.int/iris/handle/10665/351528)

• WHO 2018. Methods to analyse medicine utilization and expenditure to support pharmaceutical policy implementation (EN, RU) [https://apps.who.int/iris/handle/10665/274282](https://apps.who.int/iris/handle/10665/274282)

• Drug and Therapeutics Committees - A Practical Guide, WHO, 2003 (EN, FR, SP) [https://apps.who.int/iris/handle/10665/68553](https://apps.who.int/iris/handle/10665/68553)

• The selection and use of essential in vitro diagnostics: report of the fourth meeting of the WHO Strategic Advisory Group of Experts on In Vitro Diagnostics, 2022 (including the fourth WHO model list of essential in vitro diagnostics)

• WHO 2021. The selection and use of essential in vitro diagnostics - TRS 1031 [https://www.who.int/publications/i/item/9789240019102](https://www.who.int/publications/i/item/9789240019102)

**c) Substandard and falsified medical products**

• The WHO Member State mechanism on substandard and falsified medical products [https://www.who.int/publications/i/item/WHO-MHP-RPQ-REG-2022.01](https://www.who.int/publications/i/item/WHO-MHP-RPQ-REG-2022.01)

• WHO global surveillance and monitoring system [https://www.who.int/publications/i/item/9789241513425](https://www.who.int/publications/i/item/9789241513425)

• iLearn resources
  
  o Training on substandard/falsified (SF) medical products, Module 1: Introduction & overview
  
  o Training on substandard/falsified (SF) medical products, Module 2: Responding to incidents
d) Quality of antimicrobials

- Operational principles for good pharmaceutical procurement (EN, FR, SP)
  https://apps.who.int/iris/handle/10665/66251

- Model quality assurance system for procurement agencies
  https://apps.who.int/iris/handle/10665/69721

- TRS 1025 - Annex 7: Good storage and distribution practices for medical products (EN, FR)
  o https://www.who.int/publications/m/item/trs-1025-annex-7

- TRS 961 - Annex 10: Procedure for prequalification of pharmaceutical products
  a. https://www.who.int/publications/m/item/annex-10-trs-961

e) Resources specific to Latin America

- El acceso a los medicamentos de alto costo en las Americas(2009)

- El acceso y uso racional de los medicamentos y otras TS estrategicos de alto costo (2016)

- Lista de productos del Fondo Estratégico (EN, SP)  https://www.paho.org/en/node/58472

10. Monitoring

- Tracking AMR Country Self-Assessment Survey (TrACSS) 2023 results

- TrACSS 2022 country reports

- Guidance to facilitate monitoring and evaluation for antimicrobial resistance national action plans (who.int)

- Tripartite Monitoring and Evaluation (M&E) framework for the Global Action Plan on Antimicrobial Resistance, with Methodology sheets for recommended indicator
  https://www.who.int/publications/m/item/monitoring-and-evaluation-of-the-global-action-plan-on-antimicrobial-resistance
11. One Health


- Strategic framework for collaboration on antimicrobial resistance. Together for One Health [https://www.who.int/publications/i/item/9789240045408](https://www.who.int/publications/i/item/9789240045408)

- Global Leaders Group on Antimicrobial Resistance [https://www.amrleaders.org](https://www.amrleaders.org)
  - A pocket guide for ministers across sectors. [https://www.amrleaders.org/resources/m/item/pocket-guide](https://www.amrleaders.org/resources/m/item/pocket-guide)


- Animal Health and Welfare and Antimicrobial Resistance and Use (amrleaders.org)

- Implementation of WOAH standards: the Observatory Annual Report, First edition 2022

- The Lancet Series on One Health and Global Health Security

- 1st Global Joint Summit of Human and Veterinary Medicines Regulatory Authorities to Preserve Antimicrobials Summit Report

Food safety & zoonotic diseases


• Guidelines on Integrated Monitoring and Surveillance of Foodborne antimicrobial resistance (2021)
  https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXG%252F2021%252FCXG_94e.pdf

• Code of practice to minimise and contain foodborne antimicrobial resistance Adopted in 2005.
  Amended in 2021.

• WHO guidelines on use of medically important antimicrobials in food-producing animals, Nov 2017
  Executive summary in AR, CH, EN, FR, RU, SP.
  Policy brief in AR, CH, EN, FR, RU, SP. https://www.who.int/publications/i/item/9789241550130

• AGISAR guidance for integrated surveillance of AMR in foodborne bacteria: Application of a One Health

12. Environment

• Antimicrobial Resistance in the Environment Webinar Series
  https://www.unep.org/events/webinar/antimicrobial-resistance-environment-webinar-series

• Technical brief on water, sanitation, hygiene (WASH) and wastewater management to prevent
  infections and reduce the spread of antimicrobial resistance (AMR) (who.int)

• Call to action by the Global Leaders Group on Antimicrobial Resistance on reducing antimicrobial
  discharges from food systems, manufacturing facilities and human health systems into the
  environment ( Available in AR, CH, EN, FR, RU, SP)
  https://www.amrleaders.org/resources/m/item/reducing-antimicrobial-discharges-from-food-systems-
  manufacturing-facilities-and-human-health-systems-into-the-environment

• Bracing for Superbugs: Strengthening environmental action in the One Health response to antimicrobial
  resistance. 2023 https://www.unep.org/resources/superbugs/environmental-action

• Summary for Policymakers - Environmental dimensions of antimicrobial resistance
  https://www.unep.org/resources/report/summary-policymakers-environmental-dimensions-antimicrobial-
  resistance

13. AMR and broader initiatives

• Antimicrobial Resistance and the Climate Crisis - Information note of the Global Leaders Group on
  Antimicrobial Resistance (AR, CH, EN, FR, RU, SP)
  https://www.amrleaders.org/resources/m/item/antimicrobial-resistance-and-the-climate-crisis

• TB, HIV, malaria and neglected tropical diseases: Strengthening collaboration to prevent and manage antimicrobial resistance. https://apps.who.int/iris/bitstream/handle/10665/311689/9789241515450-eng.pdf

• Antimicrobial resistance and primary health care. Technical series on primary health care brief on the occasion of the Global Conference on Primary Health Care.  
  https://apps.who.int/iris/handle/10665/326454?search_result=true&query=primary+care&scope=&rpp=10&sort_by=score&order=desc  
  ○ Short version: http://www.who.int/docs/default-source/primary-health-care-conference/amr.pdf?sfvrsn=8817d5ba_2

14. Other

• WHO AMR Division online AMR Community Exchange platform. Register at amrcommunityexchange.org

• Global Antibiotic Research & Development Partnership (GARDP) Antimicrobial Encyclopaedia https://revive.gardp.org/resources/encyclopaedia/

• ReAct ToolBox https://www.reactgroup.org/toolbox/

• CIDRAP Antimicrobial Stewardship Project Newsletter. Subscribe here http://www.cidrap.umn.edu/newsletter

• JAC – Antimicrobial Resistance (JAC-AMR) - an open-access journal that publishes academic content and peer-reviewed commentary on stewardship resources. https://academic.oup.com/jacamr


• Open University/Fleming Fund Online learning: Tackling Antimicrobial Resistance Courses.  

• British Society for Antimicrobial Chemotherapy (BSAC), including GASPH. https://bsac.org.uk/
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