



GLASS

The detection and reporting of colistin resistance

Second edition

Global Antimicrobial Resistance and
Use Surveillance System (GLASS)



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ISBN 978-92-4-001904-1 (electronic version)

ISBN 978-92-4-001905-8 (print version)

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Suggested citation. GLASS: the detection and reporting of colistin resistance, second edition. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.

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

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Design and layout by 400 Communications Limited.

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Acknowledgements

WHO thanks the following authors and contributors at WHO collaborating centres:

Valeria Bortolaia; Alejandra Corso; Andrey Dekhnich; Rene S. Hendriksen; Roman Kozlov; Monica Lahra; Jean Patel; Wantana Paveenkittiporn; Olga Perovic; Ana Rita Rebelo and Neil Woodford.

Contributions by staff at the WHO regional offices

Sheick Oumar Coulibaly, Walter Fuller, Laetitia Gahimbare for the Regional Office for Africa (AFRO); Marcelo Galas and Ramon Pardo Pilar at the Regional Office for the Americas (PAHO); Mona Elshokry and Franciscus Konings at the Regional Office for the Eastern Mediterranean (EMRO); Danilo Lo Fo Wong at the Regional Office for Europe (EURO); Aparna Singh Shah and Sirenda Vong at the Regional Office for South East Asia (SEARO); and Socorro Escalante, Raynal Squires and Babatunde Olowokure at the Regional Office for the Western Pacific (WPRO).

External reviewers

Anette M. Hammerum (Statens Serum Institute, Denmark); Rumina Hasan (Aga Khan University, Pakistan); Susan Van Den Hof and Ed Kuijper (National Institute for Public Health and the Environment, RIVM, Netherlands); Gunnar Kahlmeter and Erika Matuschek (European Committee on Antimicrobial Susceptibility Testing, EUCAST); Maria Karlsson and Joseph Lutgring (Centers for Disease Control and Prevention, USA); and Gregory Tyson (Food and Drug Administration, USA).

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Financial support

The Government of the United States of America.

Acronyms and abbreviations

AMR	Antimicrobial resistance
CAT	Colistin Agar Test
CBDE	Colistin Broth Disk Elution
CLSI	Clinical and Laboratory Standards Institute
EUCAST	European Committee on Antimicrobial Susceptibility Testing
GLASS	Global Antimicrobial Resistance Surveillance System
MIC	Minimum inhibitory concentration
PCR	Polymerase chain reaction

Summary

The scope of this technical note is to review current methods for the detection of colistin resistance and to provide a framework for its investigation. The document highlights the critical distinction between phenotypic detection of colistin resistance and genotypic detection of specific colistin resistance mechanisms, such as *mcr* and chromosomal mutations. Colistin resistance in Enterobacteriales and *Acinetobacter baumannii* is included in the WHO Global Antimicrobial Resistance Surveillance System (GLASS). Currently, however, reliable tests for phenotypic detection of colistin resistance for clinical and surveillance purposes are not widely available.

The technical note describes existing phenotypic methods for detecting colistin resistance, genotypic methods for detecting specific colistin resistance mechanisms and surveillance strategies for monitoring colistin resistance.

This is a rapidly evolving field with new resistance genes being identified regularly and new methods for phenotypic resistance testing being described, hence this document will be updated, as needed, to reflect these developments.

This is the second edition of *The detection and reporting of colistin resistance* that was first published in December 2018 (<https://apps.who.int/iris/bitstream/handle/10665/277175/WHO-WSI-AMR-2018.4-eng.pdf>). This new edition includes information on additional *mcr* genes which have since been identified. It also includes updated information in the section on the laboratory related detection of colistin resistance. Additional technical guidance is provided on phenotypic methods, including information on some recently published novel methods. The section on genotypic methods includes updated technical guidance and tools.

Key Points

- In humans, colistin is generally used as a last resort to treat infections with highly resistant Gram-negative bacteria.
- Resistance to colistin is ongoing, with new resistance genes emerging.
- Acquired colistin resistance mechanisms are both plasmid-mediated and chromosomal.
- Phenotypic testing for colistin susceptibility has inherent technical difficulties, and only broth microdilution

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