## POH 115: ANTIMICROBIAL RESISTANCE AND PANDEMICS

**Module Overview**

Definition of terms: Antimicrobial resistance (AMR); antimicrobials; antibiotics; AMR surveillance; One Health approach. Drivers of AMR; AMR burden; justification for AMR

Introduction to and use of antimicrobials; the emergence of antimicrobial resistance and its implications on humans, animals, and the environment; detection, surveillance, and prevention and control of AMR; Importance of rational use and prescribing of antibiotics/antimicrobials to both animals and humans; national, regional, and international laws enacted and policies formulated to combat antimicrobial resistance, Antimicrobial stewardship. National and Global Action Plan in combating antimicrobial resistance.

**Mode of Delivery**

This includes lectures: problem-based learning using interactive tutorials, small group discussions and written assignments, plenary presentations; case studies, experiential learning through independent/reflective study and field visits and placements; and online peer discussions using video clips and conferencing.

**Instructional Materials and/or Equipment**

*Materials:* Lecture notes and slides, video clips, Handouts, case studies, Reference materials (textbooks, journals, policy document guidelines), institutional placements and field visits

*Equipment:* LCD projectors, laptops, whiteboard, markers and flipcharts, LCD, printers, and internet access for e-resources.

**Core Reference Materials**

1. World Bank. 2017. “Drug-Resistant Infections: A Threat to Our Economic Future.” Washington, DC: World Bank. License: Creative Commons Attribution CC BY 3.0 IGO).
2. Berkner, S., Konradi, S., & Schönfeld, J. (2014). Antibiotic resistance and the environment—there and back again: Science & Society series on Science and Drugs. *EMBO reports*, *15*(7), 740-744.
3. Getahun, H., Smith, I., Trivedi, K., Paulin, S., & Balkhy, H. H. (2020). Tackling antimicrobial resistance in the COVID-19 pandemic. *Bulletin of the World Health Organization*, *98*(7), 442.
4. Tayler, E., Gregory, R., Bloom, G., Salama, P., & Balkhy, H. (2019). Universal health coverage: an opportunity to address antimicrobial resistance? *The Lancet Global Health*, *7*(11), e1480-e1481.
5. Vekemans J, Hasso-Agopsowicz M, Kang G, Hausdorff WP, Fiore A, Tayler E, Klemm EJ, Laxminarayan R, Srikantiah P, Friede M, Lipsitch M. Leveraging Vaccines to Reduce Antibiotic Use and Prevent Antimicrobial Resistance: A World Health

**Recommended Reference Materials**

1. Alsan, M., Schoemaker, L., Eggleston, K., Kammili, N., Kolli, P., & Bhattacharya, J. (2015). Out-of-pocket health expenditures and antimicrobial resistance in low-income and middle-income countries: an economic analysis. *The Lancet infectious diseases*, *15*(10), 1203-1210.
2. World Health Organization, Food and Agriculture Organization of the United Nations and World Organisation for Animal Health. (2020). *Technical Brief on Water, Sanitation, Hygiene and Wastewater Management to Prevent Infections and Reduce the Spread of Antimicrobial Resistance*.Geneva: World Health Organization; 2020. Retrieved from <https://www.who.int/publications/i/item/9789240006416>.
3. World Health Organization. (2015). Global action plan on antimicrobial resistance. Retrieved from <https://www.who.int/publications/i/item/9789241509763>.
4. OPGA/WHO/FAO/OIE. (2016, September). High-Level Meeting on Antimicrobial Resistance. New York. Retrieved from <https://www.un.org/pga/71/2016/09/21/press-release-hl-meeting-on-antimicrobial-resistance/>
5. World Health Organization. (2022). Global Database for the Tripartite Antimicrobial Resistance (AMR) Country Self-Assessment Survey (TRACSS). 2021. Retrieved from <https://amrcountryprogress.org>.
6. Gochez, D., Moulin, G., & Erlacher-Vindel, E. (2021). OIE Annual Report on Antimicrobial Agents Intended for Use in Animals. better understanding of the global situation. Fifth report. Retrieved from https://www.woah.org/app/uploads/2022/06/a-sixth-annual-report-amu-final.pdf
7. Nielsen, L. R., Alban, L., Ellis-Iversen, J., Mintiens, K., & Sandberg, M. (2020). Evaluating integrated surveillance of antimicrobial resistance: experiences from use of three evaluation tools. *Clinical Microbiology and Infection*, *26*(12), 1606-1611.Retrieved from https://www.fao.org/antimicrobial-resistance/resources/tools/fao-pmp-amr/en/
8. Sandberg, M., Hesp, A., Aenishaenslin, C., Bordier, M., Bennani, H., Bergwerff, U., ... & Alban, L. (2021). Assessment of evaluation tools for integrated surveillance of antimicrobial use and resistance based on selected case studies. *Frontiers in Veterinary Science*, *8*, 620998.
9. Sumpradit, N., Chongtrakul, P., Anuwong, K., Pumtong, S., Kongsomboon, K., Butdeemee, P., ... & Tangcharoensathien, V. (2012). Antibiotics Smart Use: a workable model for promoting the rational use of medicines in Thailand. *Bulletin of the World Health Organization*, *90*, 905-913.
10. ReAct Group. (2016). *Antibiotic Smart Use Thailand.* Retrieved from <https://www.reactgroup.org/wp-content/uploads/2016/10/Antibiotic-Smart-Use-project-case-study.pdf>

World Health Organization. (2021). Antimicrobial resistance and the United Nations sustainable development cooperation framework: guidance for United Nations country teams. Retrieved from <https://www.who.int/publications/i/item/9789240036024>