

Intelligent and versatile IT support for antimicrobial stewardship

K.-P. ADLASSNIG^{1,2}, W. KOLLER¹, B. WILLINGER¹, F. THALHAMMER¹, J. GAWRYLKOWICZ^{2,3}, A. RAPPELSBERGER¹

¹Medical University of Vienna, Vienna, Austria; ²Medexter Healthcare GmbH, Vienna, Austria; ³University of Vienna, Informatics Studies, Vienna, Austria

INTRODUCTION

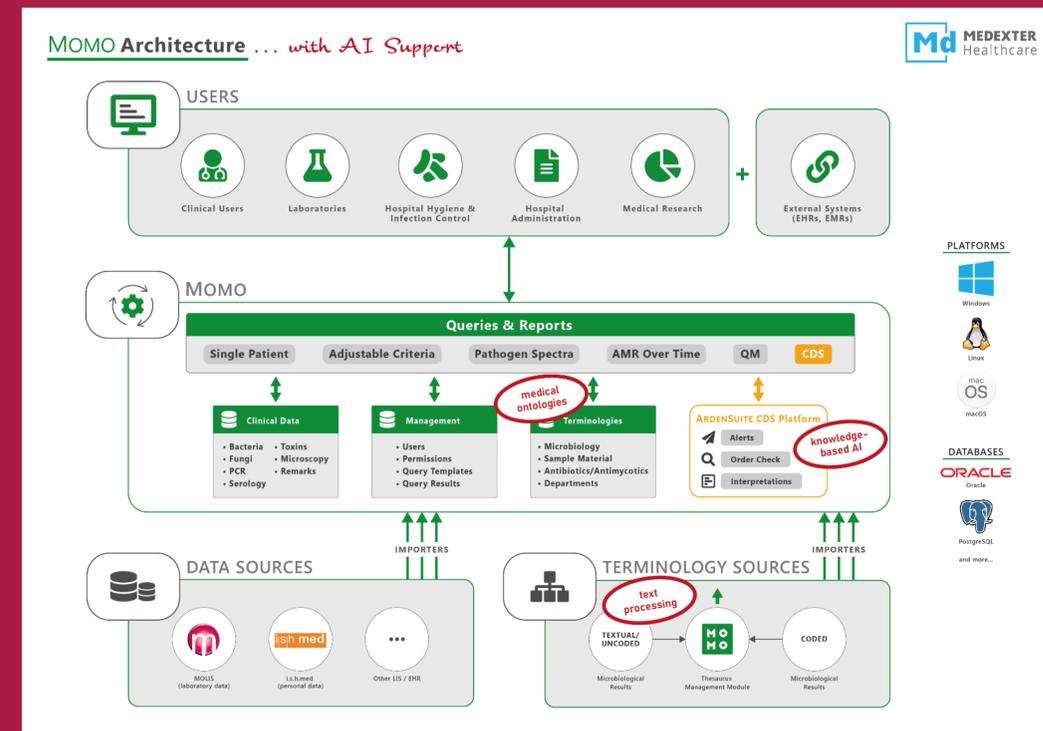
Antimicrobial stewardship programs (ASPs) are of increasing importance and focus on therapy correctness, adverse events, and antimicrobial resistance (AMR) prevention. ASPs rely on monitoring, analyzing, and reporting of microbiological test results which can effectively be supported by information technology (IT).

METHODS

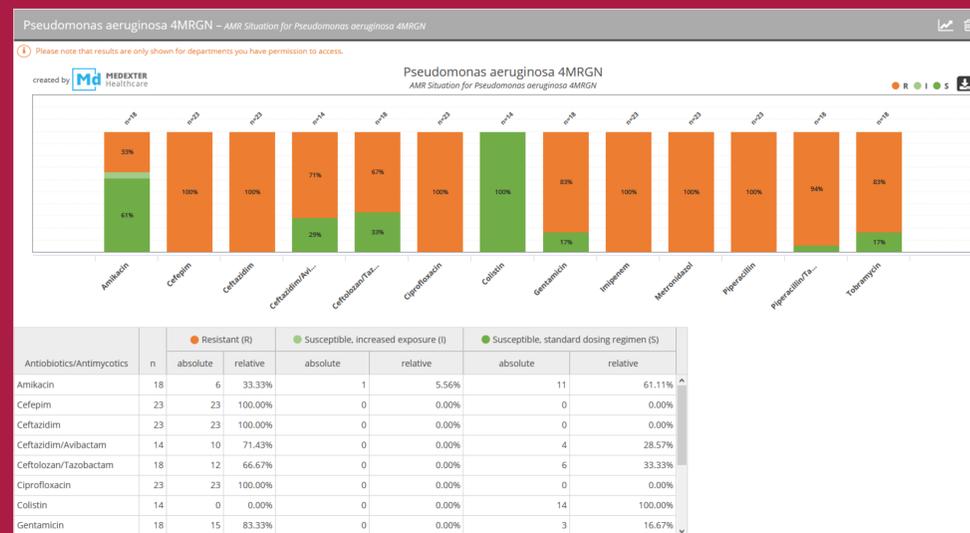
At the University Hospital Vienna (UHV), antimicrobial stewardship involves many stakeholders: clinicians, laboratory and infection control personnel, hospital and quality management, epidemiologists, and researchers. In such a diverse environment, computer-based support is essential. Over the last years, a versatile server- and web-application-based software, called Momo (monitoring of microorganisms), was developed and put into operation [1].

RESULTS

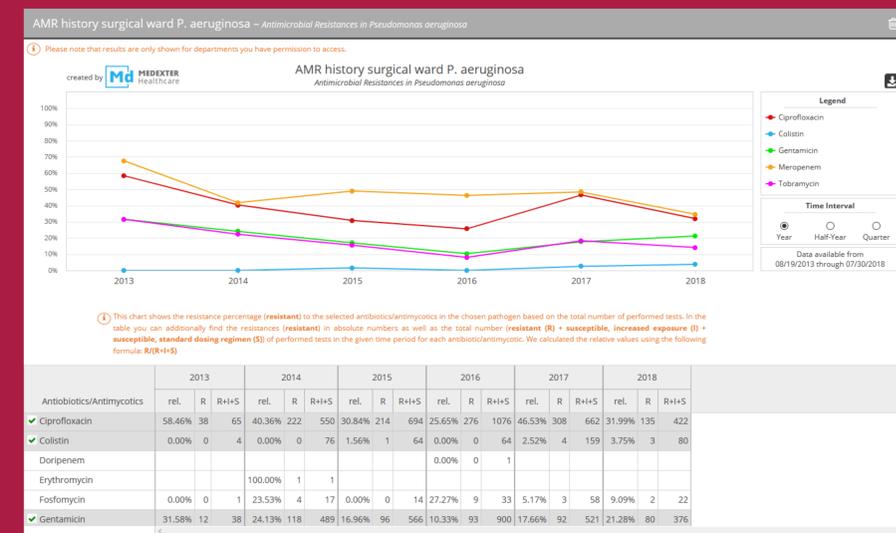
Momo is in routine operation since September 2018. It receives all relevant data from the UHV's microbiology laboratory in a structured, digitized form including also workflow information from specimen receipt to clearance of reports. Momo provides support through (a) single patient overviews, (b) customizable queries with full microbiological data, (c) frequency distributions of the selected parameters, (d) graphically displaying AMR patterns, and (e) displaying AMR changes over time. Careful consideration was given to the terminology system [2]. An ontology module supports timely management of main terms, synonyms, changes in taxonomy, and multiple superordinate concepts. Freely selectable reporting rules issued by CLSI and EUCAST are included. Now, Momo can also be accessed directly with OneClick from the UHV's intensive care information systems and from its general hospital information system. At present, a total of 1.5 million reports are available for analysis.



Momo architecture, components, data paths, and its different users



Antimicrobial resistance situation in a selected group of patients



Resistance history of selected antimicrobial substances

CONCLUSIONS

Momo is well integrated and used. It covers a broad range of demands of the stakeholders involved and exchanges import data and output results with other IT systems. Momo OneClick access makes it an effective daily ASP supporting tool.

REFERENCES

[1] Koller, W., Rappelsberger, A., Willinger, B., Kleinoscheg, G., Adlassnig, K.-P. (2021) Artificial Intelligence in Infection Control—Healthcare Institutions Need Intelligent Information and Communication Technologies for Surveillance and Benchmarking. In Kreinovich, V., Phuong, N.H. (Eds.) Soft Computing for Biomedical Applications and Related Topics, Springer, Cham, 37–48.

[2] Koller, W., Kleinoscheg, G., Willinger, B., Rappelsberger, A., Adlassnig, K.-P. (2019) Augmenting Analytics Software for Clinical Microbiology by Man-Machine Interaction. In Ohno-Machado, L., Séroussi, B. (Eds.) MEDINFO 2019: Health and Wellbeing e-Networks for ALL – Proceedings of the 17th World Congress on Medical and Health Informatics, IOS Press, Amsterdam, 1243–1247.

CONTACT INFORMATION

Univ.-Prof. DI Dr. Klaus-Peter Adlassnig, FACMI, FIAHSI
Section for Artificial Intelligence and Decision Support
Center for Medical Statistics, Informatics, and Intelligent Systems
Medical University of Vienna
Spitalgasse 23
1090 Vienna, Austria
www.meduniwien.ac.at/kpa
and
Medexter Healthcare GmbH
Borschkegasse 7/5
1090 Vienna, Austria
www.medexter.com