

RES-349

Electronic Device and Middleware Interface for Rapid Microbiological Report in Tertiary Hospitals and Data Channeling System for WHONET Surveillance.



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Background



Microbiological reports of pathogen and antibiogram are crucial for successful treatment. Rapid turnaround time can reduce morbidity and mortality in critically infected patients by early antibiotic treatment. Automated bacterial identification systems are now available in most hospitals; however, some do not get full capacity of such systems. We developed specialized electronic device and middleware interface (MicroLink) to deliver real-time microbiology reports including parameters, such as organism name, specimen type, antibiotic resistance profile, to terminal end users (physicians or infection control nurses) throughout healthcare facility. Encrypted hexadecimal data in HL7 (Health Level Seven) format can be further sent as CSV file into WHONET software (Brigham and Women's Hospital in Boston, USA, Version: 25.7.18 for epidemiological report or outbreak surveillance.

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Methods



Once automated identification system, e.g., VITEX2, and antibiotic susceptibility results were available, data were transmitted through RS-232 port (inter-device operability with option for TCP/IP protocol over a network) using specialized electronic device. Data were compiled with HIS data from server (all needed patient demographic data were included) and encrypted data were delivered to terminal personal computers at designated location for easy access by authorized personnel (password secured access) in dashboard style showing alerts and critical events

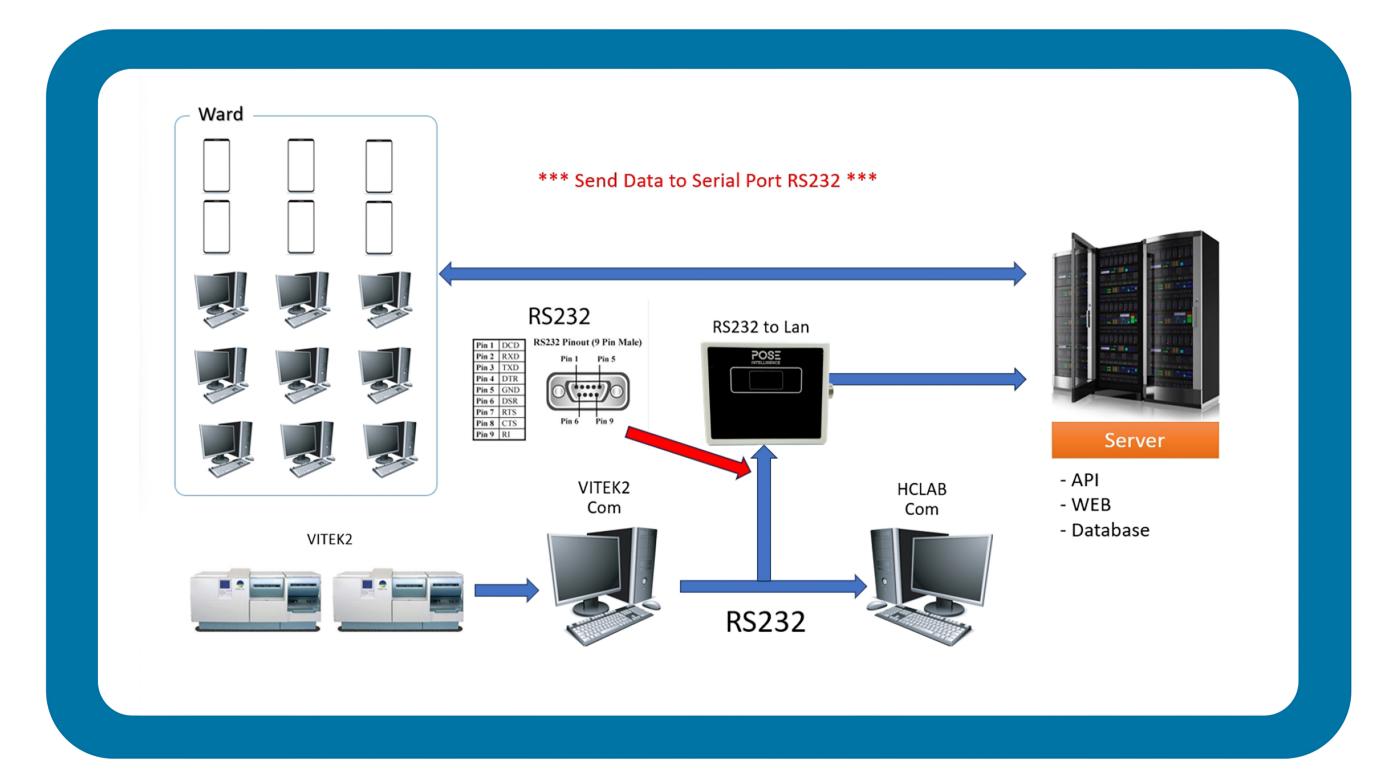


Figure 1. Diagram showing the real-time data transmission from laboratory to end users



Results



The developed system successfully provided real-time delivery of microbiological reports across the hospital, allowing physicians and infection control staff to access timely alerts and critical event notifications through the dashboard. Importantly, the export of data into WHONET enabled local-level analysis of antimicrobial resistance trends within each hospital, supporting internal infection control and stewardship programs. As an additional benefit, the transmitted data also contributed to WHONET's global antimicrobial resistance surveillance network, strengthening regional and international monitoring efforts.

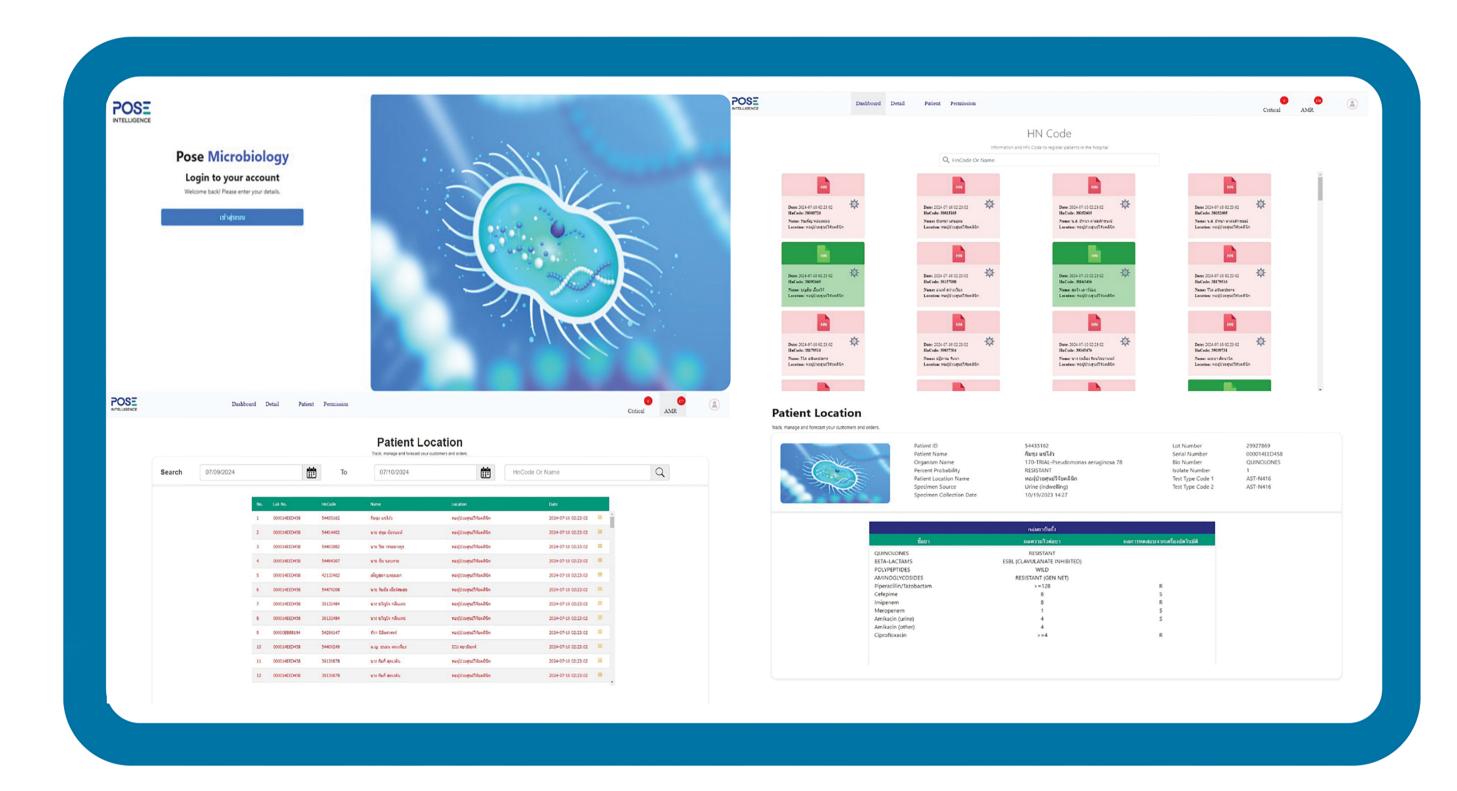


Figure 2. Real-time microbiology reporting and patient data interface

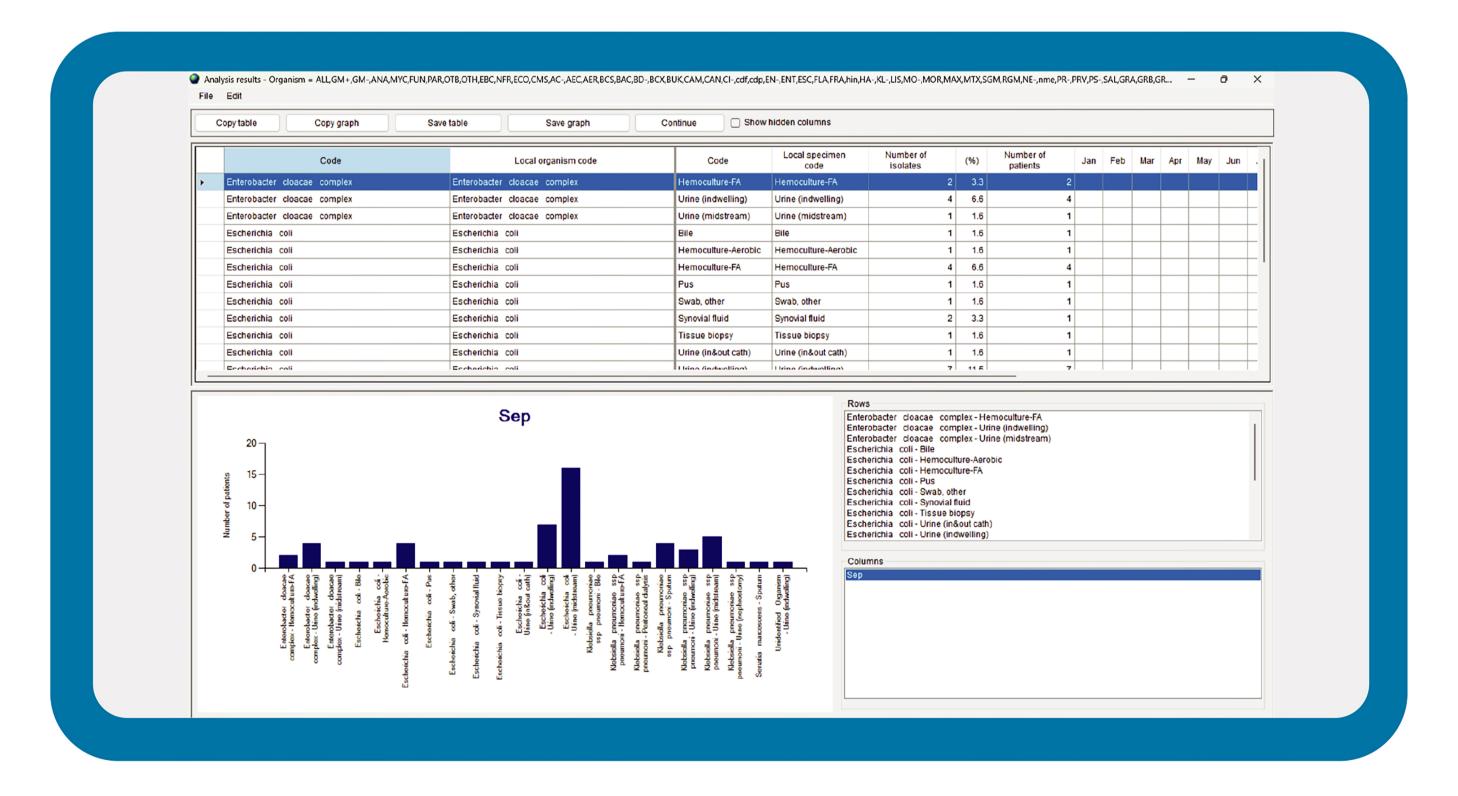


Figure 3. WHONET analysis output using imported hospital microbiology data from MicroLink



Conclusion



With automated real-time direct report delivery to end users throughout healthcare facility, hospital can improve patient care by early specific and appropriate antibiotic treatment. The system can reduce administrative burden, and automated data exchange can reduce manual data entry, free up workload. Data can be delivered to WHONET software directly.