

# DETECTION OF HEALTHCARE-RELATED INFECTIONS DUE TO MULTIDRUG-RESISTANT MICROORGANISMS IN COVID-19 PATIENTS AT AN INTENSIVE CARE UNIT IN A SECONDARY HOSPITAL IN SPAIN

Christine Giesen, Laura Díez-Izquierdo, Carmen Saa-Requejo, Ana Gómez-Santana, Inmaculada López-Carrillo, Carmen López-Vilela, Miguel Ángel González-Gallego, Cristina García-Fernández, COVID Epidemiological Surveillance and Control Study Group

## Conclusions

We detected **30 healthcare related infections (HRI)** in 14 patients, both in **clinical and colonization** samples. Both infection control to prevent HRI and screening for multidrug-resistant microorganism (MRM) are of great importance to avoid further spread.

## Background

**Rises in healthcare related infections (HRI)** have been reported during the current SARS-CoV-2 pandemic. Some of these HRI are due to **multidrug-resistant microorganism (MRM)**, whose known risk factors include previous hospital admission during the last three months, institutionalized patients, known previous infection and/or colonization by MRM, having received antibiotics for seven or more days in the last month, especially cephalosporins or carbapenems and special medical conditions, among others. Patients **admitted to Intensive Care Units (ICU)** are at special risk of both developing HRI and infections due to MRM. In this study, we aimed at assessing the epidemiological features and dynamics of HRI due to MRM among patients who were admitted to the ICU during the COVID-19 outbreak between February 27 and July 31, 2020 in Spain in a secondary hospital.

## Methods

Retrospective descriptive study of HRI due to MRM in confirmed COVID-19 ICU inpatients during the first wave of the SARS-CoV-2 pandemic at Infanta Sofía University Hospital, San Sebastián de los Reyes (Madrid). Patient characteristics, antimicrobial drug therapy and microbiological samples outcomes were analysed.

## Results

76 confirmed COVID-19 cases were admitted to our ICU. **30 HRI** that met national HRI criteria were detected in **14 patients**. The most frequently detected HRI were **tracheobronchitis** (57.14%, 95% CI 45.94%-68.34%, n=8), **bacteremia** (50%, 95% CI 40.20%-59.80%, n=7) and **ventilator-associated pneumonia** (42.86%, CI 34.46%-51.26%, n=6). Positive cultures for MRM were detected in **32 samples**. **Extended betalactamase producing Klebsiella pneumoniae** was the most frequently detected MRM (n=24) (Figure 1).

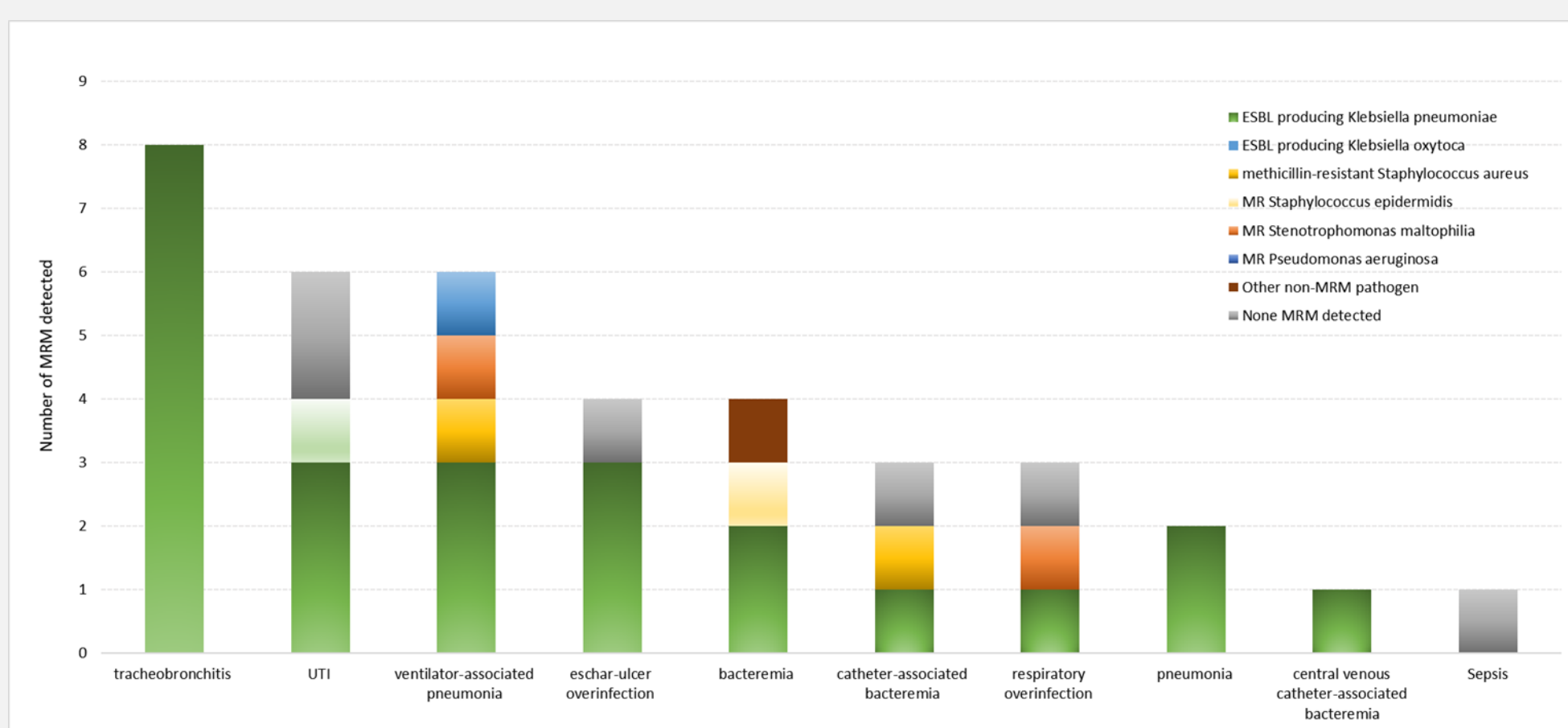


Figure 1. MRM detected in the 33 HRI. Source: own elaboration.

The highest detection of MRM positive samples was found during the month of April. The **cumulative incidence** during the study period of acquired multiresistant pathogens was **32,9%**, with an **incidence rate of 0,02** (0,2 new cases per 10-person-days of follow up). The median days since ICU admission and positive MRM testing was 14,1 days (12,3 sd).

Statistically significant differences were found with respect to **ICU stay**, the presence of **central line** and **urinary catheters**, the presence of a **tracheostomy tube** and **rectal catheter**, in the use of **antifungal** and **biologic drugs**.

Patients who presented a MRM positive sample received a **higher percentage of carbapenems, macrolides, quinolones and sulfonamides** in comparison to all patients that were admitted to ICU during the study period (Figure 2).

ANTIBIOTIC USE PERCENTAGE AMONG ICU ADMITTED PATIENTS

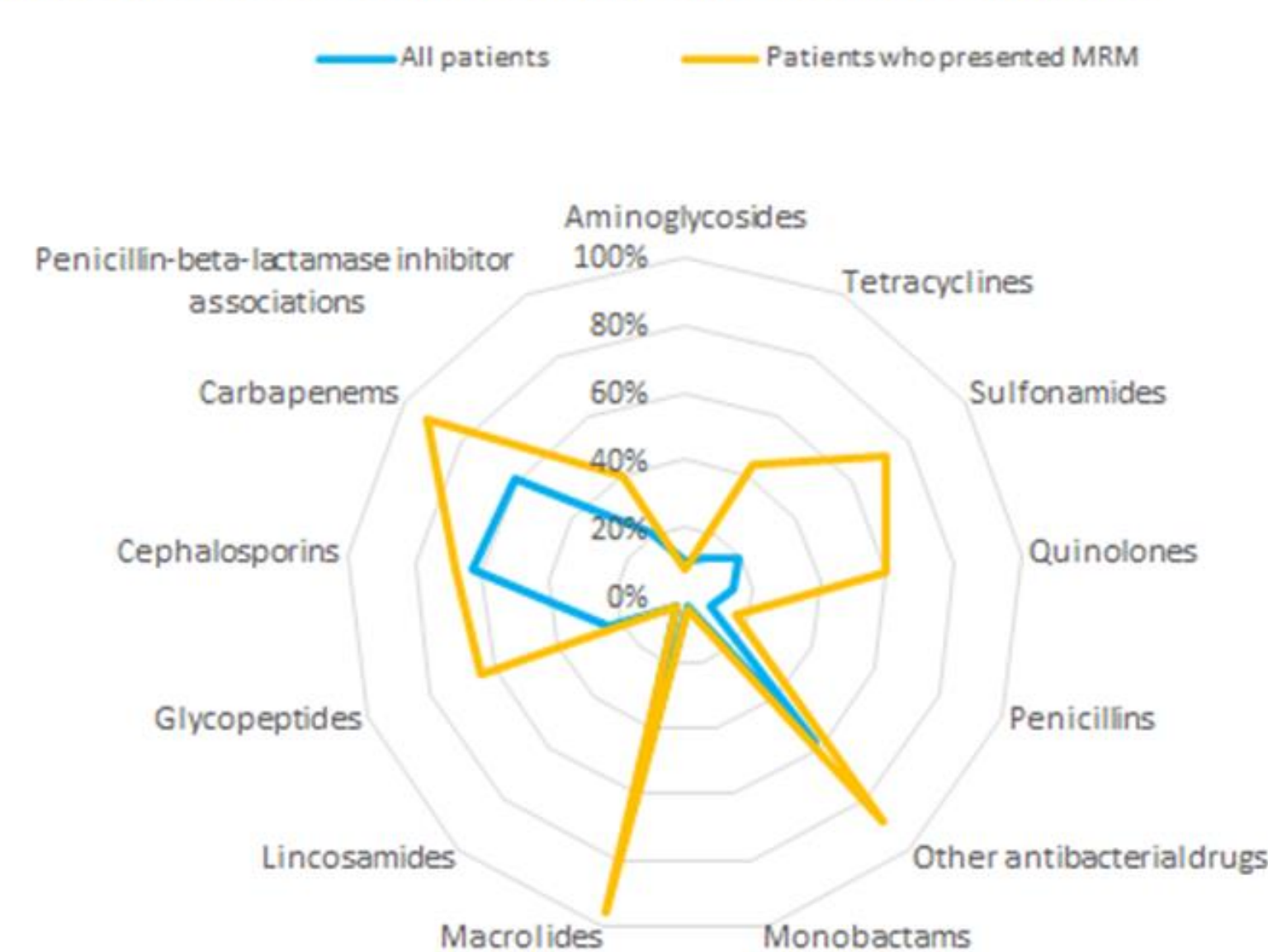


Figure 2. Antibiotic use among ICU admitted patients. The blue line represents all patients. Patients who presented MRM positive samples are shown with a yellow line.

Source: own elaboration

The authors declare no conflict of interest.

COVID Epidemiological Surveillance and Control Study Group: Cristina Bayón García, Raquel Moreno Cortés, Isabel Troncoso Fernández-Bada, Carmen Gijón Moreno, Anmgélica Ortega Torres, Blanca Pedroche Calleja, Laura López Vázquez, Víctor Manuel Irigoyen Mansilla, Greta Amat Baeza

