Predictors of discordant MRSA nares and respiratory cultures in patients with pneumonia

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discordance within the same hospitalization, and few subjects (1.6%) had a respiratory sample obtained >14 days after the nares swab. While these duration cut-off points have been identified in the literature, the NPV remains high even beyond 7 and 14 days.\(^5\)\(^6\) Mallidi et al.\(^8\) calculated an NPV >98% in critically ill patients using a duration between swab and respiratory sample collection of up to 60 days. Ultimately, extrapolation to other institutions is dependent on local prevalence and testing practices.

In conclusion, negative MRSA nares testing with a subsequent positive respiratory culture is a rare occurrence, supporting de-escalation of anti-MRSA therapies for patients with pneumonia. In patients with suspected pneumonia who have a history of MRSA infection or an MRSA swab collected ≥7 days prior, a high-quality respiratory sample should be pursued for diagnostic purposes as opposed to repeating an MRSA swab.

**Table 1.** Baseline characteristics and univariate analysis of potential risk factors for having negative MRSA nares swabs with a positive MRSA respiratory culture result in patients diagnosed with pneumonia

| Characteristic                                      | Cases (n=46) | Controls (n=138) | P value | Unadjusted OR (95% CI) |
|-----------------------------------------------------|--------------|------------------|---------|------------------------|
| Age, years, mean (SD)                               | 64.5 (17.7)  | 68.1 (14.2)      | 0.51    | —                      |
| BMI, kg/m\(^2\), mean (SD)                          | 29.6 (9.3)   | 28.3 (7.4)       | 0.58    | —                      |
| Race, n (%)                                         |              |                  |         |                        |
| Caucasian                                           | 28 (60.9)    | 85 (61.6)        |         |                        |
| African American                                    | 5 (10.9)     | 15 (10.9)        |         |                        |
| Other/not reported                                   | 13 (28.2)    | 38 (27.5)        |         |                        |
| Charlson comorbidity index, median (IQR)            | 4 (2–6)      | 5 (3–7)          | 0.23    | —                      |
| Diabetes mellitus, n (%)                            | 19 (41.3)    | 47 (34.1)        | 0.38    | 1.36 (0.69–2.70)       |
| Renal replacement therapy, n (%)                    | 4 (8.7)      | 6 (4.3)          | 0.27    | 2.10 (0.56–7.78)       |
| Immunocompromised\(^a\), n (%)                      | 2 (4.3)      | 24 (17.4)        | 0.028   | 0.22 (0.05–0.95)       |
| Chronic lung disease, n (%)                         | 12 (26.1)    | 27 (19.6)        | 0.35    | 1.45 (0.66–3.17)       |
| Surgery within prior 90 days, n (%)                 | 10 (21.7)    | 21 (15.2)        | 0.31    | 1.55 (0.67–3.59)       |
| Surgery during hospitalization, n (%)               | 14 (30.4)    | 41 (29.7)        | 0.93    | 1.04 (0.50–2.14)       |
| Length of stay, days, median (IQR)                  | 26 (13–42)   | 16 (10–24)       | <0.001  | —                      |
| Central venous catheter, n (%)                      | 26 (57)      | 61 (44)          | 0.15    | 1.64 (0.84–3.22)       |
| Vasopressor support, support, n (%)                 | 21 (45.7)    | 60 (43.5)        | 0.80    | 1.09 (0.56–2.14)       |
| Mechanically ventilated prior to MRSA nares, n (%)  | 30 (65.2)    | 85 (61.6)        | 0.66    | 1.17 (0.58–2.35)       |
| Duration of mechanical ventilation, days, median (IQR) | 1 (0–3)     | 1 (0–3)          | 0.72    | —                      |
| Time to MRSA nares, days, median (IQR)              | 1 (0–3)      | 2 (0–5)          | 0.27    | —                      |
| Time between admission and MRSA nares ≥7 days, n (%) | 7 (15.2)     | 21 (15.2)        | 1.00    | 1.00 (0.40–2.53)       |
| Time between MRSA nares and respiratory culture ≥7 days, n (%) | 14 (30.4) | 3 (2.2) | <0.001 | 19.69 (5.34–72.61)    |
| Vancomycin exposure prior to nares collection, n (%) | 13 (28.3)    | 62 (44.9)        | 0.046   | 0.48 (0.23–1.00)       |
| Prior history of MRSA infection or colonization, n (%) | 4 (8.7)      | 1 (0.7)          | 0.014   | 13.05 (1.42–119.94)    |

\(^a\)HIV/AIDS, solid organ transplant on immunosuppressants, recent stem-cell or bone-marrow transplant, active chemotherapy, immunosuppressive medications.

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