

Original Research Article

Prevalence and distribution of methicillin-resistant staphylococcal infections in a tertiary care hospital: a prospective observational study

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ABSTRACT

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-resistant coagulase-negative staphylococci (MR-CONS) cause healthcare- and community-associated infection and spread rapidly within hospitals. Local surveillance guides empirical therapy and infection control. This study determined the prevalence, distribution, and outcome of MRSA and MR-CONS infections across areas of a tertiary care hospital.

Methods: A six-month prospective observational study was conducted at S.S. Institute of Medical Sciences and Research Centre, Davangere. Staphylococcal isolates from clinical specimens submitted from different hospital areas were identified by standard methods. Methicillin resistance was detected by cefoxitin disc diffusion per CLSI criteria; susceptibility was tested by the Kirby-Bauer method.

Results: Of 216 staphylococcal isolates, 80 (37.0%) were *S. aureus* and 136 (63.0%) were CONS. Fourteen isolates (17.5% of *S. aureus*) were MRSA, and 16 (11.8% of CONS) were MR-CONS, an overall rate of 13.9% (30/216). General wards and the outpatient department contributed the most isolates and highest MRSA/MR-CONS counts, while ICUs contributed few resistant isolates. Blood and pus/wound/tissue specimens yielded the largest share of resistant isolates. No isolate was vancomycin-resistant, and all patients recovered.

Conclusions: Methicillin resistance was relatively low overall, suggesting effective infection control, particularly in critical care areas. The disproportionate burden of resistant isolates in general wards and the OPD highlights the need to strengthen infection control outside ICUs and investigate risk factors for community- and ward-acquired MRSA.

Keywords: MRSA, MR-CONS, Coagulase-negative staphylococci, Antimicrobial resistance, Tertiary care hospital, Nosocomial infection

INTRODUCTION

Staphylococcus aureus and coagulase-negative staphylococci (CONS) are among the most frequently isolated bacterial pathogens in clinical microbiology laboratories worldwide, ranging from minor skin and soft-tissue infections to life-threatening bacteremia, endocarditis, and device-associated infections.¹ The introduction of methicillin in the late 1950s temporarily addressed penicillin resistance, but methicillin-resistant strains emerged within a few years and have since

become endemic in hospitals across the world. Methicillin resistance in staphylococci is mediated principally by the *mecA* gene, which encodes an altered penicillin-binding protein, PBP2a, with low affinity for beta-lactam antibiotics; this confers resistance to virtually the entire beta-lactam class, not just methicillin.^{2,3}

MRSA and methicillin-resistant coagulase-negative staphylococci (MR-CONS) are a major cause of potentially life-threatening infections acquired in both healthcare and community settings, and they are notorious for their capacity to spread rapidly within

hospital units and precipitate outbreaks. Colonized patients and healthcare workers, contaminated surfaces, and inadequate hand hygiene are well-recognized routes of transmission. The clinical and infection-control implications of MRSA differ from area to area within a single hospital, with intensive care units, surgical wards, and outpatient departments each carrying a distinct risk profile depending on patient acuity, device use, antibiotic exposure, and the intensity of contact precautions in place.

Detection of methicillin resistance has evolved considerably. While the *mecA* polymerase chain reaction (PCR) and detection of PBP2a remain the reference standards, they are not universally available in resource-limited laboratories.^{2,3} The clinical and laboratory standards institute (CLSI) currently recommends the cefoxitin disc diffusion test as a reliable phenotypic surrogate marker for *mecA*-mediated resistance in both *S. aureus* and CONS, since cefoxitin is a more potent inducer of the *mecA* regulatory system than oxacillin and yields sharper, more reproducible zone-diameter cut-offs.⁴

From an epidemiological and public health standpoint, MRSA is classified by the World Health Organization as a high-priority pathogen for research, surveillance, and antimicrobial stewardship, reflecting its substantial global burden of morbidity and the limited pipeline of new antistaphylococcal agents.⁵ Beyond well-described healthcare-associated transmission, community-associated MRSA (CA-MRSA) strains have emerged as an increasingly important cause of skin and soft-tissue infection outside the hospital setting, often in individuals without traditional risk factors such as recent hospitalization, indwelling devices, or antibiotic exposure.

Overcrowding, poor personal hygiene, close physical contact, and shared personal items are recognized community-level determinants of MRSA transmission, and the boundary between community and hospital reservoirs is increasingly blurred as CA-MRSA strains are introduced into healthcare settings and vice versa. This dual epidemiology underscores the relevance of hospital-based surveillance not only for infection control but also as a sentinel indicator of MRSA circulating in the wider community, and highlights the need for a coordinated public health response that extends beyond individual patient care to encompass outpatient antibiotic stewardship and community health education.

Given the propensity of MRSA and MR-CONS to spread rapidly and cause outbreaks, continuous, real-time surveillance of their local burden and distribution within a hospital is essential to inform empirical antibiotic policy and to direct infection-control resources to the areas of greatest need. Data of this kind are particularly valuable when generated locally, since the prevalence and distribution of MRSA vary considerably between

institutions, regions, and countries.⁶⁻¹¹ This study was therefore undertaken to determine the prevalence of MRSA and MR-CONS infections, their distribution across different areas of the hospital, and their clinical outcome, among staphylococcal isolates recovered from various clinical specimens at a tertiary care hospital.

METHODS

This study is reported in accordance with the STROBE (strengthening the reporting of observational studies in epidemiology) guidelines for observational studies.

Study design and setting

This was a prospective observational study conducted over a period of six months, from January 2022 to June 2022, in the Department of Microbiology, S.S. Institute of Medical Sciences and Research Centre (SSIMS&RC), Davangere, Karnataka, India.

Sample collection

Non-duplicate staphylococcal isolates were recovered from clinical specimens (blood, pus/wound swab/tissue, sputum, urine, vaginal swab, and endo-tracheal tube aspirate) submitted to the microbiology laboratory from patients admitted to or attending the intensive care units (ICU, NICU, MICU, PICU, RICU, NSICU), general wards, and the outpatient department (OPD) during the study period.

Inclusion criteria

All non-duplicate staphylococcal isolates recovered from the specimens and hospital areas described above during the study period were included, with only the first isolate from each patient per infection episode considered for analysis.

Exclusion criteria

Repeat isolates of the same organism from the same patient during the same hospital admission or infection episode, isolates from screening or surveillance swabs not associated with a clinical infection, and specimens with mixed or contaminant growth precluding confident identification of *Staphylococcus* species were excluded.

Isolate identification

Clinical specimens were processed by standard laboratory procedures for the isolation and identification of *Staphylococcus* species, including colony morphology, Gram stain, catalase test, and coagulase test (slide and tube), as described in Mackie & McCartney practical medical microbiology.¹² Coagulase-positive isolates were identified as *S. aureus*, and coagulase-negative isolates were grouped as CONS.

Detection of methicillin resistance

Methicillin resistance in *S. aureus* and CONS isolates was detected using the cefoxitin disc diffusion method as per CLSI guidelines.⁴ A cefoxitin disc (30 µg) was applied to a Mueller-Hinton agar plate inoculated to a 0.5 McFarland standard, and plates were incubated at 35°C for 16-18 hours. *S. aureus* isolates with a zone of inhibition ≤ 21 mm were classified as methicillin-resistant *S. aureus* (MRSA), and ≥ 22 mm as methicillin-susceptible *S. aureus* (MSSA). CONS isolates with a zone of inhibition ≤ 24 mm were classified as methicillin-resistant CONS (MR-CONS), and ≥ 25 mm as methicillin-susceptible CONS (MS-CONS).⁴

Antimicrobial susceptibility testing, including susceptibility to vancomycin, was performed by the Kirby-Bauer disc diffusion method as per CLSI guidelines,⁴ using a panel of antimicrobial agents spanning penicillins, cephalosporins, macrolides, lincosamides, folate pathway antagonists, tetracyclines, fluoroquinolones, aminoglycosides, oxazolidinones, glycopeptides, aminocoumarins, carbapenems, and beta-lactam/beta-lactamase inhibitor combinations.

Statistical analysis

Data were entered and analyzed using Microsoft Excel. Results are expressed as frequencies and percentages, with 95% confidence intervals (CI) for key prevalence estimates calculated using the Wilson score method. To compare the burden of methicillin resistance between critical care areas (ICU, NICU, MICU, PICU, RICU, and NSICU, combined) and non-critical care areas (general wards and OPD, combined), risk ratios (RR) with 95% CI were calculated, and the association between area type and resistance was tested using the chi-square test with Yates' continuity correction, with Fisher's exact test applied where expected cell counts were small. A two-tailed *p* value <0.05 was considered statistically significant.

Ethical considerations

The study was approved by the Institutional Ethics Committee of S.S. Institute of Medical Sciences & Research Centre, Davangere, Karnataka, India (approval number: IERB No. 504-2022). Since the study involved bacterial isolates recovered from routine clinical specimens rather than direct patient intervention, the committee granted a waiver of individual informed consent. Patient identifiers were not linked to the microbiological data reported in this manuscript.

RESULTS

During the six-month study period, a total of 216 non-duplicate staphylococcal isolates were recovered from clinical specimens submitted from various areas of the hospital. Of these, 80 (37.0%) were identified as *S.*

aureus (of which 66 were methicillin-susceptible and 14 methicillin-resistant) and 136 (63.0%) as CONS (of which 120 were methicillin-susceptible and 16 methicillin-resistant).

Overall methicillin resistance

Fourteen isolates (6.5% of all isolates) were confirmed as MRSA, representing 17.5% of the 80 total *S. aureus* isolates (95% CI 10.7-27.3%, Wilson score method). Sixteen isolates (7.4% of all isolates) were MR-CONS, representing 11.8% of the 136 total CONS isolates (95% CI 7.4-18.3%). The combined methicillin-resistance rate among all staphylococcal isolates was 13.9% (30/216, 95% CI 9.9-19.1%) (Table 1).

Distribution by hospital area

Table 1 shows the distribution of isolates by hospital area. The general wards (64 isolates) and OPD (49 isolates) together accounted for more than half of all isolates, and also contributed the highest absolute numbers of both MRSA (6 each) and MR-CONS (4 each). Among the intensive care areas, the MICU yielded the largest number of isolates (43) and contributed two of the 14 MRSA isolates; the remaining ICUs (ICU, NICU, PICU, RICU, NSICU) contributed no MRSA isolates during the study period, although small numbers of MR-CONS were identified in several of them.

When the six critical care areas were combined (103 isolates; 10 methicillin-resistant) and compared with the combined general wards and OPD (113 isolates; 20 methicillin-resistant), the risk of methicillin resistance was numerically higher in the general wards/OPD group (17.7% vs. 9.7%; RR 1.82, 95% CI 0.90-3.71), although this difference did not reach statistical significance (chi-square with Yates' correction=2.25, *p*=0.13; Fisher's exact *p*=0.12).

Restricting the comparison to MRSA among *S. aureus* isolates specifically, the rate was 20.3% (12/59) in the general wards/OPD versus 9.5% (2/21) in the critical care areas (RR 2.14, 95% CI 0.52-8.76; Fisher's exact *p*=0.33), again a non-significant trend given the small numbers involved.

Distribution by clinical specimen

Table 2 shows the distribution of isolates by specimen type. Blood was the most frequently submitted specimen (93 isolates), followed by pus/wound swab/tissue (67 isolates).

Pus/wound swab/tissue specimens yielded the highest number of MRSA isolates (10 of 14, 71.4%) despite contributing fewer total isolates than blood, indicating a disproportionately high resistance rate among staphylococci from soft-tissue and surgical-site specimens.

Vancomycin susceptibility and clinical outcome

None of the 14 MRSA isolates or 16 MR-CONS isolates showed resistance to vancomycin. All patients with

MRSA and MR-CONS infections were treated and recovered, with no attributable mortality recorded during the study period.

Table 1: Distribution of staphylococcal isolates by clinical specimen.

Area of hospital	Total isolates	<i>S. aureus</i> (MS)	CONS (MS)	MR-CONS	MRSA
ICU	20	5	14	1	0
NICU	10	0	8	2	0
MICU	43	6	33	2	2
PICU	17	3	12	2	0
RICU	6	4	2	0	0
NSICU	7	1	5	1	0
Ward	64	25	29	4	6
OPD	49	22	17	4	6
Total	216	66	120	16	14

S. aureus (MS)" and "CONS (MS)" denote methicillin-susceptible isolates only; "MR-CONS" and "MRSA" are reported as separate, non-overlapping columns. Total *S. aureus* (susceptible+resistant) =80; total CONS (susceptible+resistant) =136.

Table 2: Distribution of staphylococcal isolates by clinical specimen.

Specimens	Total isolates	<i>S. aureus</i> (MS)	CONS (MS)	MR-CONS	MRSA
Blood	93	15	67	9	2
Pus/wound swab/tissue	67	36	19	2	10
Sputum	7	3	4	0	0
Urine	37	7	23	5	2
Vaginal swab	3	0	3	0	0
ET tube aspirate	9	5	4	0	0
Total	216	66	120	16	14

DISCUSSION

In this six-month prospective study, the overall prevalence of methicillin resistance among staphylococcal isolates was 13.9%, with MRSA accounting for 17.5% of all *S. aureus* isolates and MR-CONS accounting for 11.8% of all CONS isolates. This prevalence is considerably lower than figures reported from several other Indian tertiary care centers. Arora et al in a study from a hospital in Amritsar, Punjab, reported that 46% of 250 coagulase-positive staphylococcal isolates were methicillin-resistant, while a nationwide surveillance report from the INSAR described MRSA rates varying widely between participating centers, underscoring substantial regional heterogeneity in MRSA burden across India.^{6,8} A 2022 systematic review and meta-analysis of MRSA prevalence in India likewise found considerable variability between studies and regions, reflecting differences in patient populations, infection-control practices, and antibiotic stewardship.⁹ Against this backdrop, a study from a tertiary hospital in Mangalore reported a somewhat closer prevalence of 29.1% MRSA among *S. aureus* isolates, and a Nepalese tertiary-care study reported an MRSA prevalence of 26.4% among *S. aureus* isolates both still appreciably higher than the 17.5% observed here.^{7,11} The present rate

also compares favorably in an international context: a 12-year retrospective surveillance study from the United Arab Emirates reported MRSA rates among *S. aureus* isolates that, despite year-to-year fluctuation, remained substantially above those observed at this institution, suggesting that the low prevalence reported here is not merely a feature of regional Indian comparators but holds up against a wider international benchmark.¹⁵

The prevalence of MR-CONS in this study (11.8% of CONS isolates) was likewise lower than that reported by other Indian tertiary care groups using combined phenotypic and genotypic methods. Bhatt et al at a tertiary care center, detected methicillin resistance by *mecA* gene detection in almost one-third of coagulase-negative staphylococcal isolates nearly three times the rate observed here.¹³ Differences in patient case-mix, the proportion of isolates arising from indwelling devices and intravascular catheters, and the criteria used to distinguish pathogenic CONS from skin-commensal contaminants are all likely to contribute to this variation between centers, and underscore the importance of interpreting CONS resistance data in the context of local sampling and specimen-selection practices. This is consistent with the broader epidemiology of CONS, which typically behave as opportunistic, device-associated pathogens whose clinical significance most notably in bloodstream

infection is closely tied to the use of intravascular catheters and other indwelling devices, and offers a plausible explanation for why blood contributed the largest share of MR-CONS isolates in the present series (9 of 16, Table 2).¹⁷ The comparatively low prevalence observed in the present study may reflect effective implementation of infection-control measures at this institution, particularly within the intensive care areas, where hand hygiene compliance, contact precautions, and antibiotic stewardship tend to be most rigorously enforced. This interpretation is consistent with an ICU-specific study from Lucknow, which reported an MRSA prevalence of only 10.2% among *S. aureus* isolates in critical care units, appreciably lower than rates reported from general hospital populations.¹⁰ Bundled infection-control interventions in critical care areas combining active surveillance culture, reinforced hand hygiene, contact precautions, and environmental decontamination have been shown elsewhere to produce comparable reductions in healthcare-associated MRSA acquisition, lending further plausibility to the low ICU-area rates observed here.¹⁶

In the present study, five of the eight hospital areas surveyed ICU, NICU, PICU, RICU, and NSICU yielded no MRSA isolates at all, which is a reassuring finding for a tertiary care hospital and is consistent with the hypothesis that focused infection-control efforts in critical care areas can meaningfully constrain MRSA transmission. It should be noted, however, that although the risk of methicillin resistance was numerically almost twice as high in the general wards/OPD as in the critical care areas combined (RR 1.82, 95% CI 0.90-3.71), this difference did not reach statistical significance, most likely reflecting the limited number of resistant isolates available for comparison; a larger, multicentric sample would be needed to confirm whether this represents a true area-level difference in risk.

By contrast, the general wards and OPD together accounted for 12 of the 14 MRSA isolates (85.7%) and eight of the 16 MR-CONS isolates (50.0%) in this study, despite containing a broadly similar or smaller proportion of total isolates than the ICUs combined. This pattern suggests that infection-control measures outside the critical care areas, and the possibility of community-acquired MRSA presenting through the OPD, warrant particular attention. Patients attending the OPD are, by definition, not subject to the barrier precautions applied to inpatients, and a proportion of the MRSA identified in this setting may represent community-associated strains rather than hospital-acquired transmission; distinguishing between these two categories, for example through SCC *mec* typing or documentation of recent healthcare contact, was beyond the scope of this study but represents an important direction for future local surveillance. This possibility is consistent with reports from elsewhere in India: a study from a rural district hospital in Andhra Pradesh found that MRSA accounted for nearly two-thirds of community-associated *S. aureus* skin and soft-

tissue infections, a proportion approaching that seen among hospital-associated isolates from the same institution evidence that CA-MRSA is no longer a rare phenomenon in Indian community settings, and that the boundary between hospital and community reservoirs may be similarly blurred at the present institution.¹⁴

Pus, wound swab, and tissue specimens yielded a disproportionately high number of MRSA isolates (10 of 14, 71.4%) relative to their overall contribution to the specimen pool, consistent with the well-recognized tropism of MRSA for skin and soft-tissue infections and surgical sites reported in other studies.^{7,11} This finding reinforces the value of using cefoxitin susceptibility testing on all staphylococcal isolates from wound and pus specimens, irrespective of the clinical impression of severity, given the implications for empirical antibiotic selection in this specimen category. Reassuringly, none of the MRSA or MR-CONS isolates in this study showed resistance to vancomycin, and no attributable mortality occurred among affected patients. This is in keeping with the global experience that vancomycin resistance remains rare among staphylococci in most clinical settings, although sporadic reports of vancomycin-intermediate and heteroresistant strains from other Indian centers underscore the continued importance of vancomycin susceptibility surveillance rather than complacency.⁴

This study has several limitations. It was conducted at a single center over a relatively short period of six months, which limits the generalizability of the findings and precludes assessment of seasonal variation in MRSA prevalence. Methicillin resistance was confirmed phenotypically by the cefoxitin disc diffusion method rather than by molecular detection of the *mecA* gene or PBP2a, which remains the gold standard; although cefoxitin disc diffusion is a CLSI-endorsed and well-validated surrogate marker, occasional discordance with molecular methods has been described.^{2,3}

The study did not capture patient-level demographic or clinical risk factors (for example, age, prior antibiotic exposure, device use, or duration of hospital stay), which would be needed to formally distinguish hospital-acquired from community-acquired MRSA and to identify modifiable risk factors for acquisition. Finally, antimicrobial susceptibility beyond cefoxitin and vancomycin was not analyzed in the results presented here; a fuller antibiogram would strengthen the clinical utility of this surveillance data for empirical therapy decisions. The relatively small absolute number of resistant isolates (30 in total) also limited the statistical power available to detect area-level differences in resistance risk, as reflected in the wide confidence intervals around the risk ratios reported above; these comparisons should therefore be regarded as hypothesis-generating rather than confirmatory.

From a community medicine perspective, these findings have implications that extend beyond the confines of this

hospital. The concentration of MRSA and MR-CONS in the general wards and OPD, settings with greater interface with the surrounding community, reinforces the value of integrating hospital-based staphylococcal surveillance data into broader antimicrobial resistance surveillance networks, such as the ICMR antimicrobial resistance surveillance network and the WHO global antimicrobial resistance and use surveillance system (GLASS), so that local trends can inform regional and national policy.^{5,8,9}

Strengthening antibiotic stewardship at the primary and outpatient care level, promoting rational antibiotic use in the community, and improving public awareness of hand hygiene and wound care may help curb the community-to-hospital transmission of MRSA suggested by the OPD findings in this study. Collaborative surveillance involving the departments of microbiology and community medicine, incorporating patient-level epidemiological data such as occupation, household contacts, and prior healthcare exposure, would help clarify the relative contributions of hospital- and community-acquired MRSA and guide targeted public health interventions.

CONCLUSION

In conclusion, methicillin resistance among staphylococcal isolates at this tertiary care hospital was relatively low overall (13.9%) compared with several other Indian and regional centers, and no MRSA or MR-CONS isolates were identified in most of the intensive care units surveyed, suggesting that current infection-control measures in these high-risk areas are effective. However, the disproportionate concentration of resistant isolates in the general wards and OPD, and their predominance in pus/wound/tissue specimens, indicates a need to extend and strengthen infection-control vigilance beyond the ICUs. Continued, real-time local surveillance, together with future studies incorporating molecular confirmation and patient-level risk-factor analysis, would help direct infection-control resources most effectively and clarify the relative contribution of community-acquired strains presenting through the OPD.

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REFERENCES

1. Arciola CR, Campoccia D, Speziale P, Montanaro L, Costerton JW. Biofilm formation in *Staphylococcus* implant infections. A review of molecular mechanisms and implications for biofilm-resistant materials. *Biomaterials*. 2012;33:5967-82.
2. Anand KB, Agrawal P, Kumar S, Kapila K. Comparison of cefoxitin disc diffusion test, oxacillin screen agar, and PCR for *mecA* gene for detection of MRSA. *Indian J Med Microbiol*. 2009;2:27-9.
3. Oliveira DC, de Lencastre H. Methicillin-resistance in *Staphylococcus aureus* is not affected by the overexpression in trans of the *mecA* gene repressor: a surprising observation. *PLoS One*. 2011;6:23287.
4. Clinical and Laboratory Standards Institute. Performance Standards for Antimicrobial Susceptibility Testing, 32nd Informational Supplement. CLSI document M100. Wayne, PA: CLSI. 2022.
5. World Health Organization. WHO Bacterial Priority Pathogens List, 2024: Bacterial Pathogens of Public Health Importance to Guide Research, Development and Strategies to Prevent and Control Antimicrobial Resistance. Geneva: WHO. 2024. Available at: <https://www.who.int/publications/i/item>. Accessed on 21 March 2026.
6. Arora S, Devi P, Arora U, Devi B. Prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) in a tertiary care hospital in Northern India. *J Lab Physicians*. 2010;2:78-81.
7. Pai V, Rao VI, Rao SP. Prevalence and antimicrobial susceptibility pattern of methicillin-resistant *Staphylococcus aureus* (MRSA) isolates at a tertiary care hospital in Mangalore, South India. *J Lab Physicians*. 2010;2:82-4.
8. Indian Network for Surveillance of Antimicrobial Resistance (INSAR) group, India, Joshi S, Ray P, et al. Methicillin resistant *Staphylococcus aureus* (MRSA) in India: prevalence & susceptibility pattern. *Indian J Med Res*. 2013;137:363-9.
9. Patil SS, Suresh KP, Shinduja R, Amachawadi RG, Chandrashekar S, Pradeep S, et al. Prevalence of methicillin-resistant *Staphylococcus aureus* in India: a systematic review and meta-analysis. *Oman Med J*. 2022;37:440.
10. Kumar G, Yadav R. Prevalence of MRSA in ICU in a tertiary care hospital. *Ann Int Med Dent Res*. 2019;5:19-22.
11. Adhikari P, Basyal D, Rai JR, Bharati L, Budthapa A, Gharti KP, et al. Prevalence, antimicrobial susceptibility pattern and multidrug resistance of methicillin-resistant *Staphylococcus aureus* isolated from clinical samples at a tertiary care teaching hospital: an observational, cross-sectional study from the Himalayan country, Nepal. *BMJ Open*. 2023;13:67384.
12. Collee JG, Fraser AG, Marmion BP, Simmons A, eds. Mackie & McCartney Practical Medical Microbiology. 14th ed. New York, NY: Churchill Livingstone; 2006:413-24.
13. Bhatt P, Tandel K, Singh A, Kumar M, Grover N, Sahni AK. Prevalence and molecular characterization of methicillin resistance among coagulase-negative staphylococci at a tertiary care center. *Med J Armed Forces India*. 2016;72(1):54-8.
14. Alvarez-Uria G, Reddy R. Prevalence and antibiotic susceptibility of community-associated methicillin-resistant *Staphylococcus aureus* in a rural area of

- India: is MRSA replacing methicillin-susceptible *Staphylococcus aureus* in the community. *ISRN Dermatol*. 2012;2012:248951.
15. Thomsen J, Abdulrazzaq NM, Menezes GA, Moubareck CA, Everett DB, Senok A. Methicillin resistant *Staphylococcus aureus* in the United Arab Emirates: a 12-year retrospective analysis of evolving trends. *Front Public Health*. 2023;11:1244351.
 16. Huang H, Ran J, Yang J, Li P, Zhuang G. Impact of MRSA transmission and infection in a neonatal intensive care unit in China: a bundle intervention study during 2014-2017. *Biomed Res Int*. 2019;2:5490413.
 17. Rogers KL, Fey PD, Rupp ME. Coagulase-negative staphylococcal infections. *Infect Dis Clin North Am*. 2009;23(1):73-98.

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