



**Predictive Risk Factors for Methicillin-Resistant *Staphylococcus aureus*  
(MRSA) Colonisation among Adults in Acute Care Settings: A  
Systematic Review**

Submitted by

Yifan Xue, MBBS, MPH

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**THESIS DECLARATION**

This work contains no material that has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief contains no material previously published or written by another person, except where due reference has been acknowledged in the text.

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I hereby certify that the statement of contribution is accurate

Yifan Xue.....Date.....

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## Abstract

**Background:** Limited by the structure of individual health care settings and patient recruitment, primary studies do not provide a comprehensive definition of independent risk factors for methicillin-resistant *Staphylococcus aureus* (MRSA) colonisation among adults on admission to acute care settings. A systematic review was performed to identify and evaluate the association between risk factors and MRSA colonisation.

**Methods:** MEDLINE, EMABSE, and CINAHL databases were searched for prognostic studies published between 1990 and 2010 that examined the association between risk factors and MRSA colonisation. The summary statistic extracted or calculated for each factor was the odds ratio (OR), comparing patients with MRSA colonisation to non-MRSA carriers.

**Results:** Fifteen prospective studies, including a total 16,467 patients, were eligible for inclusion in the meta-analyses. More than 30 independent risk factors were identified and aggregated. The risk factors associated with MRSA colonisation in the meta-analyses include hospitalisation within the last 24 months (OR 3.4309, 95% CI 2.9732 – 3.9590,  $p < 0.0001$ ), previous admission to a long-term care facility (LTCF) or a rehabilitation facility within the last 18 months (OR 6.7004, 95% CI 4.2609 – 10.5364,  $p = 0.0001$ ), antibiotic use within the past 12 months (OR 3.7694, 95% CI 3.2453 - 4.3781,  $p < 0.0001$ ), the presence of skin lesion (OR 3.525, 95% CI 2.6194 - 4.7437,  $p < 0.0001$ ), surgical intervention within the last 60 months (OR 2.9807, 95% CI 2.5261 - 3.5172,  $p < 0.0001$ ), indwelling urinary catheter (OR 4.3898, 95% CI 3.4317 - 5.6156,  $p < 0.0001$ ), intensive care unit (ICU) admission in the last 5 years (OR 3.8845, 95% CI 1.6605 – 9.0871,  $p = 0.0018$ ), previous MRSA colonisation (OR 6.7329, 95% CI 2.4504 – 18.4995,  $p = 0.0019$ ), intra-hospital transfer (OR 2.0955, 95% CI 1.6966 - 2.5881,  $p < 0.0001$ ), male sex (OR 1.8167, 95% CI 1.5180 - 2.1742,  $p < 0.0001$ ), comorbidity of chronic health evaluation class C or D (OR 3.025, 95% CI 2.1844 - 4.1891,  $p < 0.0001$ ), and the presence of fatal illness (OR 1.7591, 95% CI 1.4259 - 2.1702,  $p < 0.0001$ ).

**Conclusion:** The identification of risk factors for MRSA colonisation on admission may contribute to improved effectiveness and efficiency of current MRSA prevention strategies and control MRSA spread and acquisition in acute care settings. The outcomes of this review may facilitate prediction model

development to quickly identify potential MRSA carriers before admission. More and larger scale prospective studies on risk factors for MRSA carriage in community settings are needed to explore the spread of MRSA among health care setting, community and carrier families.

**Key Words:** methicillin-resistant *Staphylococcus aureus*, MRSA, colonisation, risk factor, screening, acute care