

Wound Infection Prediction Score

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ABSTRACT

There are currently no clear cut guidelines available to help clinicians discern whether a chronic wound is infected or prone to infection. Similarly, there are no established guidelines to assist in determining when systemic antibiotics are necessary or how long they should be administered. This absence of widely recognized guidelines may result in the overuse and misuse of systemic antibiotics, potentially leading to adverse drug reactions and the emergence of multidrug-resistant bacteria. Introducing a straightforward tool for assessing infection risk in patients with chronic wounds could aid clinicians in deciding when systemic antibiotics are warranted and in ensuring their appropriate use, ultimately possibly curbing the overreliance on such medications.

This study highlights the role of W.A.R. score as a wound infection prediction score.

Keywords: W.A.R.; Score; Wound; Prediction; Infection.

INTRODUCTION

Chronic wounds are associated with a significant increase in health care utilization and health care costs,¹ increased morbidity and mortality,² and decreased quality of life.³ In addition, patients with

chronic wounds have more exposure to systemic antibiotics compared with patients without chronic wounds, putting them at a higher risk for developing multidrug-resistant organisms (MDROs) and other adverse events.⁴ Because of this, it is vital for health care providers to identify when a chronic wound is at risk for infection to avoid both the overuse and underuse of systemic antibiotics.⁵ Despite this, no widely accepted guidelines exist to assist clinicians in determining when a chronic wound is infected or at risk for infection, nor do definitive guidelines exist to aid the clinician in determining the indication or duration of systemic antibiotics.^{6,7} This ambiguity can lead to excessive and improper use of systemic antibiotics, which then contributes to adverse drug events (ADEs) and the development of MDROs in not only the patient but also in the community.⁷ The Wounds at Risk (W.A.R.) score (Fig. 1) is a tool used to assess the risk of infection in patients by scoring a number of host factors that can contribute

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to an increased risk for infection in wounds. Implementing this simple tool could help clinicians determine the indication and appropriate use of systemic antibiotics and potentially reduce the use of systemic antibiotics in this patient population.

The Infectious Diseases Society of America (IDSA), the British Society for Antimicrobial Chemotherapy, and the European Wound Management Association all concur that no universally accepted diagnosis criteria for an infected chronic wound exists.^{6,7,8} They also agree that the traditional signs and symptoms of infection include redness (erythema/rubor), warmth (calor), purulence, swelling or induration (tumor), and tenderness and pain are not always present in infected chronic wounds.^{7,8} In fact, in the IDSA's guidelines for the diagnosis and treatment of diabetic foot infections, the presence of at least 2 of these symptoms is enough to

both diagnose a diabetic foot infection and treat with systemic antibiotics, but the authors of the guidelines warn that these diagnostic criteria are based solely on expert opinions and not evidence.⁸

This study highlights the role of W.A.R. score as a wound infection prediction scores

MATERIALS AND METHODS

This study was conducted in a tertiary care hospital in South India after obtaining department's scientific & ethical committee approval. Informed consent was taken from the patient & attendants. The W.A.R. score was applied on a left trochanter pressure ulcer (Fig. 2) and score was 6 at the time of admission.

Since the W.A.R score was more than 3,

Risk Class	Risk Condition	Yes	Per Risk: 1 Point
1	Acquired immunosuppressive disease (eg, diabetes mellitus) Acquired immune defect due to medical therapy such as cyclosporine, methotrexate, glucocorticoids, or antibodies Solid tumor disease Systemic hematological disease Postsurgical wound healing disorder, which results in (unplanned) secondary healing Problematic hygienic conditions related to social or occupational environment Patient age >80 years Young patient age (premature infants and infants) Wounds persisting >1 year Wound dimensions >10cm ² Chronic wounds of any etiology having a depth of >1.5cm Extended inpatient status >3 weeks		
			Per Risk: 2 Points
2	Severe acquired immune defects (eg, HIV infection) Heavily contaminated acute wounds Bite, stab, and gunshot wounds penetrating 1.5cm-3.0cm		
			Per Risk: 3 Points
3	Severe innate immunodeficiency (eg, Wiskott-Aldrich syndrome, DiGeorge syndrome, immunodeficiency after stem cell transplantation, AIDS, immunosuppressive therapy) Traumatically contaminated wound after debridement Wounds that have a direct connection to organs or functional structures (eg, joints) or which contain foreign material (eg, prosthesis)		
			Total Score:
WAR Score <3 Patient not at increased for wound infection; systemic antibiotics may NOT be indicated			
WAR score ≥4: Patient is at increased risk for wound infection; systemic antibiotics may be indicated			
WAR: Wounds at Risk for infection			

Fig. 1: Parameters for Calculating W.A.R score¹

appropriate antimicrobial therapy was started.



Fig. 2: Left trochanteric pressure ulcer with W.A.R. Score 6 at admission.

RESULTS

The W.A.R. score was found to be 6 which is more than 3 so appropriate antimicrobial therapy was started and hence W.A.R score could guide us in starting the antimicrobial therapy at admission.

As the antimicrobial therapy was started in time there was improvement in the wound condition (Fig. 3).



Fig. 3: Wound after initiation of antimicrobial therapy

We found W.A.R. score useful as a wound infection prediction score at the time of admission and whether to start antimicrobial therapy or not.

DISCUSSION

The W.A.R. score emphasizes the need to consider not only the wound appearance and presentation, but the entire patient, including immune status, age, social factors, wound chronicity, and other holistic factors. Without sufficient guidelines to assist clinicians in deciding whether to start or continue antibiotics for a chronic wound, a score to help guide these decisions can help reduce both the underuse and overuse of antibiotics and potentially reduce the incidence of ADEs related to antibiotic use, including the development of MDROs at a local level. The W.A.R. score also can help to raise awareness to the fact that all wounds are contaminated, and the use of systemic antibiotics in even critically colonized wounds is not indicated in most chronic wounds. Most chronic wounds benefit from local antiseptics and aggressive wound care management.^{7,9-10}

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The W.A.R. score serves as a valuable aid for clinicians in gauging infection risk and making informed decisions regarding the necessity of antimicrobial therapy.

We found W.A.R. score useful as a wound infection prediction score at the time of admission and whether to start antimicrobial therapy or not.

The limitation of our study is that it is applied on a single case and a large randomized double blind controlled study is required to validate our study.

CONCLUSION

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Conflicts of Interest: None

Financial disclosure: None

Declarations: None

REFERENCES

1. Reitan RL, McBroom RM, Gilder RE. The Risk of Infection and Indication of Systemic Antibiotics in Chronic Wounds. *Wounds*. 2020 Jul;32(7):186-194.
2. Chan BC. Economic Burden of Chronic Ulcers. Doctoral thesis. University of Toronto; 2017. <http://hdl.handle.net/1807/78940>.
3. Turi GK, Donovan V, DiGregorio J, et al. Major histopathologic diagnoses of chronic wounds. *Adv Skin Wound Care*. 2016;29(8):376-382.
4. Rüttermann M, Maier-Hasselmann A, Nink-Grebe B, Burckhardt M. Local treatment of chronic wounds: in patients with peripheral vascular disease, chronic venous insufficiency, and diabetes. *DtschArztebl Int*. 2013;110(3):25-31.
5. Gurgun M. Excess use of antibiotics in patients with non-healing ulcers. *EWMA J*. 2014;14(1):17-22.
6. Dissemmond J, Assadian O, Gerber V, et al. Classification of wounds at risk and their antimicrobial treatment with polihexanide: a practice-oriented expert recommendation. *Skin Pharmacol Physiol*. 2011;24(5):245-255.
7. Lipsky BA, Dryden M, Gottrup F, Nathwani D, Seaton RA, Styrya J. Antimicrobial stewardship in wound care: a position paper from the British Society for Antimicrobial Chemotherapy and European Wound Management Association. *J Antimicrob Chemother*. 2016;71(11):3026-3035.
8. Lipsky BA, Berendt AR, Cornia PB, et al. 2012 Infectious Disease Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. *Clin Infect*. 2012;54(12):e132-e173.
9. Game FL, Apelqvist J, Attinger C, et al. Effectiveness of interventions to enhance healing of chronic ulcers of the foot in diabetes: a systematic review. *Diabetes Metab Res Rev*. 2016;32(1):154-168.
10. Torkington-Stokes R, Metcalf D, Bowler P. Management of diabetic foot ulcers: evaluation of case studies. *Br J Nurs*. 2016;25(15):S27-S33.

