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Clinical Audit Report

Centor Criteria Utilization and Its Impact on Antibiotic Prescribing Practices in Pharyngo-Tonsillar Infections at a Primary Health Center – An Audit

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ABSTRACT:
Pharyngo-tonsillar infections are commonly encountered in primary care settings and contribute significantly to the overuse of antibiotics, which drives the growing concern of antimicrobial resistance. The Centor Criteria, a clinical decision-making tool, is designed to assist in the accurate diagnosis of Group A Beta-Hemolytic Streptococcal (GABHS) pharyngitis and guide appropriate antibiotic use. Despite its proven effectiveness, the Centor Criteria remains underutilized in clinical practice. This audit aimed to assess the implementation of the Modified Centor Criteria at a primary health center and its impact on antibiotic prescribing practices. A retrospective analysis of 150 randomly selected patient records was conducted, focusing on documentation of the Centor Criteria, antibiotic use, and adherence to evidence-based guidelines. The results revealed that only 6.67% of cases had complete documentation of the Centor Criteria, and in non-documented cases, 75% of patients received antibiotics, with a significant preference for second-line agents. The audit highlights a critical gap in adherence to clinical guidelines and the need for better utilization of the Centor Criteria to reduce unnecessary antibiotic use and combat antimicrobial resistance. Recommendations include increased training for healthcare providers, the integration of Centor Criteria into electronic health records, and patient education on the risks of inappropriate antibiotic use.

Key words: Sore Throat, Antibiotic Use, Centor Criteria, Bacterial Resistance

INTRODUCTION:

Pharyngo-tonsillar infections are common in primary care and a significant contributor to inappropriate antibiotic use, which drives bacterial resistance—a growing public health concern (1, 2). Addressing this issue requires improving the quality of antibiotic prescribing in primary care, where the majority of antibiotics are prescribed (3).

The Centor Criteria, a clinical decision-making tool, was developed to predict the likelihood of Group A Beta-Hemolytic Streptococcal (GABHS) pharyngitis, enhance diagnostic accuracy, reduce unnecessary treatments, and minimize healthcare costs (4). The tool was later modified to include age-based stratification, increasing its applicability across all age groups (5).

Evidence-based guidelines, such as those from the American Academy of Family Physicians (AAFP) and NICE (2008), advocate for structured approaches to managing pharyngo-tonsillar infections, emphasizing the use of clinical prediction rules like the Modified Centor Criteria to reduce unnecessary antibiotic use (6, 7).

The Modified Centor Score stratifies patients into risk categories based on cumulative scores. A score of 0 or 1 indicates a low probability of GABHS pharyngitis, generally eliminating the need for diagnostic testing or antibiotics. Scores of 2 or 3 suggest moderate risk, warranting throat culture or rapid antigen detection testing (RADT), with antibiotics prescribed only for positive results. A score of 4 or higher indicates a high probability, justifying empiric antibiotic therapy (6).

Despite its effectiveness and endorsement by international and local guidelines, the Centor Criteria remain underutilized in clinical practice (7, 8). This audit evaluates the implementation of the Centor Criteria at a primary health center and its impact on antibiotic prescribing practices.

METHODOLOGY:

Study Design: This audit utilized a retrospective analysis of clinical records to evaluate the implementation of the Modified Centor Criteria in the management of pharyngo-tonsillar infections. The study aimed to assess the adherence to these criteria and analyze the patterns of antibiotic use at a primary health center.

Study Population: The study included patients aged 6 years and older who presented with sore throat at the health center over a one-year period. A total of 150 randomly selected patient records were reviewed for this analysis.

Data Collection: Data were extracted from patient case notes using a specifically designed data collection form. The following parameters were examined:

- Documentation of the Centor Criteria
- Type of treatment received (symptomatic treatment vs. antibiotics)
- Specific antibiotics prescribed (first-line, second-line, or others)
- Any documented reason for antibiotic use, including whether the Modified Centor Criteria was applied in the decision-making process

RESULTS:

The audit analyzed 150 randomly selected files with pharyngo-tonsillar infections .

Age distribution:

6-14 years	41
15-44 years	95
>45yrs	14

Documentation of Centor criteria:

The completeness of Centor Criteria documentation is as follows:

Criteria documented	Percentage (number)
4/4 criteria	6.6% (10)
3/4 criteria	20.7% (31)
2/4 criteria	42% (63)
¼ criteria	22.7% (34)
None	8% (12)

Only 6.67% of cases had complete documentation of the Centor Criteria. In the remaining 93.4%, documentation was partial or absent.

Centor's score and antibiotic usage in Well-Documented cases:

Centor's score	Nuber of patients (total 10)	Antibiotic started
-1	1	0
0	1	1
1	2	1
2	1	1
3	4	4
4	1	1

Of the well documented cases, antibiotics were justified in only 30% of patients.

Antibiotic usage in Non-Documented cases:

Antibiotics	Number of patients (140)
Received	75
Not received	65

Level of antibiotic usage Non-Documented cases:

	Number of patients (75)
First line	12
Second line	53
Others	10

Second-line antibiotics, including macrolides and cephalosporins, were prescribed in 70% of non-documented cases, even in the absence of documented penicillin allergies.

DISCUSSION:

The findings highlight significant gaps in adherence to evidence-based practices for managing pharyngo-tonsillar infections. The low utilization of Centor Criteria underscores the lack of standardized approaches in diagnosing and treating such infections. This is particularly concerning given that adherence to these criteria has been shown to significantly reduce inappropriate antibiotic use, a major contributor to antibiotic resistance globally (7).

The low frequency of Centor Criteria utilization is concerning, especially given the associated overuse of antibiotics for simple infections such as upper respiratory tract infections (URTIs). The low utilization of Centor Criteria indicates a need for improved awareness and integration into routine clinical workflows. Antibiotic overuse, particularly the preference for second-line agents, exacerbates the issue of resistance (3, 7, 8). This study's observation of non-indicated antibiotic prescriptions aligns with previous research, which highlights that educational gaps among primary care providers are a critical barrier to improving prescription practices (8).

The Centor Criteria was developed to reduce unnecessary treatments, such as antibiotics, by offering a structured method to assess the probability of streptococcal pharyngitis. The original Centor score, based on the presence of fever, absence of cough, tonsillar exudates, and tender anterior cervical lymphadenopathy, was modified to include age-based stratification, enabling it to be applied to both adults and children. Despite its effectiveness in reducing inappropriate antibiotic use, the Centor Criteria is rarely used in clinical practice, particularly in managing sore throat cases where its application could significantly improve diagnostic accuracy.

In addition to its clinical utility, incorporating diagnostic tools such as throat culture or Rapid Antigen Detection Testing (RADT) could further refine the clinical decision-making process. While throat cultures are considered the diagnostic gold standard for GABHS pharyngitis, they are underused unless indicated. RADT, though faster, is less specific and more expensive, and it is not routinely available in all settings.

The audit results also revealed a troubling trend of prescribing second-line antibiotics, even when not indicated. The overuse of second-line agents, such as macrolides and cephalosporins, was particularly prevalent in non-documented cases, further compounding the issue of antibiotic resistance. This practice is not only costly but also contributes to the development of resistant bacterial strains, particularly in the absence of proper documentation and clinical guidelines.

Addressing these issues requires a multifaceted approach. First, there is a need to increase awareness of the Centor Criteria and encourage its regular use in clinical practice. This could be achieved through training programs, targeted educational workshops (10), and the integration of the Centor Criteria into electronic health records and clinical guidelines. Finally, patient education on the importance of appropriate antibiotic use, and the consequences of antibiotic resistance, could help reduce patient pressure for unwarranted treatments.

In conclusion, the underuse of the Centor Criteria and the overprescription of antibiotics for simple infections like sore throat are major contributors to the growing problem of antibiotic resistance. The implementation of evidence-based practices, including the regular use of the Centor Criteria and the provision of appropriate diagnostic tools, could significantly reduce inappropriate antibiotic use and improve patient care. This audit highlights the critical need for family physicians to adopt structured, evidence-based approaches to antibiotic prescribing, in line with global guidelines, to combat the rising threat of antibiotic resistance.

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