

# ENASPOC

European Network  
for Antibiotic Stewardship  
at the Point of Care



## Expert Group Consensus Statements

Antimicrobial resistance (AMR) is a global challenge that impacts us all. The purpose of the **Expert group on CRP\* point of care testing to guide antibiotic prescriptions for respiratory illness** is to keep our antibiotics effective for future generations.

Our endeavors are guided by seven core statements. Consensus regarding these statements has been achieved through extensive review of clinical evidence, group discussion, and experience.

These statements have been further discussed at the **Antibiotic Stewardship Conference: from expert consensus to Europe-wide action at the point of care** on 29. November 2022 in Brussels.

Together with our conference participants, we searched for ways to act on these insights to protect the effectiveness of antibiotics by reducing overprescribing for respiratory illness in primary care.

\*CRP = C-Reactive Protein

Sincerely,

**EXPERT GROUP ON CRP POINT OF CARE TESTING TO GUIDE ANTIBIOTIC PRESCRIPTIONS FOR RESPIRATORY ILLNESS**



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# Publications of the Expert Group:

Gentile I, Schiano Moriello N, Hopstaken R, Llor C, Melbye H, Senn O. The Role of CRP POC Testing in the Fight against Antibiotic Overuse in European Primary Care. Recommendations from a European Expert Panel. *Diagnostics* 2023; 13(320).

Open access: <https://doi.org/10.3390/diagnostics13020320>

*Further publications in progress*

## Expert Group Consensus Statements – Overview

### **CONSENSUS STATEMENT 1:**

Antimicrobial resistance is a global threat that must urgently be addressed.

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### **CONSENSUS STATEMENT 2:**

Antibiotic overprescribing for respiratory tract infections in primary care is a significant contributor to rising antimicrobial resistance.

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### **CONSENSUS STATEMENT 3:**

C-reactive protein point of care testing (CRP POCT) is an established tool that is proven to effectively and safely reduce overprescribing of antibiotics for lower respiratory tract infections (LRTIs) in adults presenting at primary care.

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### **CONSENSUS STATEMENT 4:**

To safely reduce antibiotic prescribing in primary care for patients presenting with respiratory illness, a broader application of CRP POCT globally is recommended.

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### **CONSENSUS STATEMENT 5:**

An effective implementation, combining CRP POCT together with evidence-based complementary strategies, can increase the contribution to more appropriate antibiotic prescribing.

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### **CONSENSUS STATEMENT 6:**

In the ambulatory care of febrile children presenting with symptoms of respiratory illness, CRP POCT can be useful to guide decisions regarding antibiotic prescribing and hospital referrals.

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### **CONSENSUS STATEMENT 7:**

The use of CRP POCT for the management of patients presenting symptoms of LRTIs in primary care can be economically viable in several contexts.



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## CONSENSUS STATEMENT 1:

### **Antimicrobial resistance is a global threat that must urgently be addressed**

Antimicrobial resistance (AMR) is broadly recognized as one of the biggest threats to global health, food security, and development today<sup>1</sup>. **AMR is the silent pandemic**. Without effective action AMR could surpass cancer as one of the leading causes of death worldwide<sup>2</sup>.

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## CONSENSUS STATEMENT 2:

### **Antibiotic overprescribing for respiratory tract infections in primary care is a significant contributor to rising antimicrobial resistance**

Antibiotic prescribing in humans is directly linked to levels of AMR in individuals, communities, and at a national level<sup>3</sup>. A substantial proportion of antibiotic overuse comes from prescriptions issued in primary care to adults and children with symptoms of respiratory tract infections (RTIs)<sup>4,5</sup>. A large proportion of these antibiotic prescriptions are estimated to be inappropriate<sup>6,7</sup>.

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## CONSENSUS STATEMENT 3:

### **CRP POCT is an established tool that is proven to effectively and safely reduce overprescribing of antibiotics for lower respiratory tract infections in adults presenting at primary care**

C-reactive protein (CRP) is a biomarker that is used to assess the severity of inflammation and to predict the severity of an infection. Self-limiting infections (whether viral or bacterial) are those that tend to resolve themselves without further treatment. In primary care, approximately 74% of adult patients presenting with symptoms of RTIs have CRP values <20 mg/L, indicating self-limiting infections where antibiotic treatment does not have any additional benefit<sup>8</sup>.

Several systematic reviews and meta-analyses conclude that the **use of CRP POCT can safely reduce antibiotic prescribing for adult patients** with lower respiratory tract infections (LRTIs)<sup>4,9-11</sup>. The latest Cochrane Review covering 11 randomized trials observed a mean reduction of antibiotic prescribing of 24% in adults<sup>4</sup>, with one trial even demonstrating a reduction of 42%.<sup>12</sup> Several guidelines for the management of LRTIs already recommend the use of CRP POCT.

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## CONSENSUS STATEMENT 4:

### **To safely reduce antibiotic prescribing in primary care for patients presenting with respiratory illness, a broader application of CRP POCT globally is recommended**

CRP POCT is recommended to confirm the antibiotic prescribing decision for adults presenting in primary care with symptoms of LRTIs<sup>4,9-13</sup>.

CRP POCT adds to the complete understanding of a patient's situation and adds objective information to support clinical assessment, diagnosis, and further patient treatment or management decision.

**CRP results can be used for explanation and support patient-doctor communication**, which may be particularly important in regions with relatively high antibiotic use.



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## CONSENSUS STATEMENT 5:

### **An effective implementation combining CRP POCT, together with complementary strategies, can increase the contribution to more appropriate antibiotic prescribing**

Implementing CRP POCT together with complementary strategies is crucial to optimize antibiotic prescribing without negatively impacting individual patient care. Adding complementary strategies may reduce antibiotic prescribing by more than 60%<sup>12,14</sup>. These strategies include:

- Communication skills training being provided to prescribing clinicians<sup>12,14</sup>
- Safety netting advice being provided as necessary
- Clear CRP value cut-off guidance being provided
- Delayed prescribing techniques being enabled and used when appropriate<sup>15-18</sup>
- Decision Aids being reviewed with patients<sup>19</sup>

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## CONSENSUS STATEMENT 6:

### **In the ambulatory care of febrile children presenting with symptoms of respiratory illness, CRP POCT can be useful to guide decisions regarding antibiotic prescribing and hospital referrals**

Recent reviews and meta-analysis show that CRP POCT can support antibiotic stewardship, safely reducing antibiotic prescriptions by up to 44% for children with acute illness episodes due to RTIs when cut-off guidance is applied, without negative effects on patient outcomes or healthcare processes<sup>9,10</sup>.

**CRP POCT can aid assessment of a child's situation and the severity of an infection to help inform prescription decisions.** While the clinical assessment should always prevail, it is suggested to avoid prescribing antibiotics in most cases with CRP values <20 mg/L.

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## CONSENSUS STATEMENT 7:

### **The use of CRP POCT for the management of patients presenting symptoms of LRTIs in primary care has been shown to be economically viable in several contexts**

**Antibiotic overuse in humans and AMR are strongly correlated and the total global economic cost of AMR is very high.** Cumulative costs will vary depending on the specific context, but several studies, such as those in the Netherlands, Norway, Sweden, the United Kingdom and Ireland, concluded that CRP POCT is economically viable on top of having beneficial health outcomes.

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For further reading, please find an extensive list of related publications, including systematic reviews and meta-analysis, healthcare-economic analysis, guidelines, and more via the link below:

<https://www.enaspoc.com/publications>



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## References

1. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022 Feb 12;399(10325):629-655
2. O'Neill J. Tackling Drug-Resistant Infections Globally: Final Report and Recommendations. Review on Antimicrobial Resistance 2016.
3. Costelloe C, Metcalfe C, Lovering A, Mant D, Hay AD. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ* 2010;340:c2096
4. Smedemark SA, Aabenhus R, Llor C, Fournaise A, Olsen O, Jørgensen KJ. Biomarkers as point-of-care tests to guide prescription of antibiotics in people with acute respiratory infections in primary care. *Cochrane Database Syst Rev*. 2022;10(10):CD010130.
5. Cooke J, Llor C, Hopstaken R, Dryden M, Butler C. Respiratory tract infections (RTIs) in primary care: narrative review of C reactive protein (CRP) point-of-care testing (POCT) and antibacterial use in patients who present with symptoms of RTI. *BMJ Open Resp Res* 2020;7:e000624
6. Van der Velden AW, van de Pol AC, Bongard E, Cianci D, Aabenhus R. et al. Point-of-care testing, antibiotic prescribing, and prescribing confidence for respiratory tract infections in primary care: a prospective audit in 18 European countries. *BJGP Open* 2022 ; 30;6(2)
7. Fawsitt CG, Lucey D, Harrington P, Jordan K, Marshall L et al. A cost-effectiveness and budget impact analysis of C-reactive protein point-of-care testing to guide antibiotic prescribing for acute respiratory tract infections in primary care settings in Ireland: a decision-analytic model. *Fam Pract*. 2022;39(3):389-397
8. Van Vugt SF, Broekhuizen BD, Lammens C, Zuithoff NPA, de Jong PA et al. GRACE consortium. Use of serum C reactive protein and procalcitonin concentrations in addition to symptoms and signs to predict pneumonia in patients presenting to primary care with acute cough: diagnostic study. *BMJ*. 2013;346:f2450
9. Martínez-González NA, Keizer E, Plate A et al. Point-of-Care C-Reactive Protein Testing to Reduce Antibiotic Prescribing for Respiratory Tract Infections in Primary Care: Systematic Review and Meta-Analysis of Randomised Controlled Trials. *Antibiotics* 2020;9(9):610
10. Verbakel JY, Lee JJ, Goyder C, Tan PS, Ananthakumar T et al. Impact of point-of-care C reactive protein in ambulatory care: a systematic review and meta-analysis. *BMJ Open*. 2019;9(1):e025036
11. O'Brien K, Gloeckner L, Jordan K et al. EUnetHTA report 2019. Rapid assessment on other health technologies using the HTA Core Model for Rapid Relative Effectiveness Assessment. C-reactive protein point-of-care testing (CRP POCT) to guide antibiotic prescribing in primary care settings for acute respiratory tract infections (RTIs). EUnetHTA Project ID: OTCA012..
12. Cals JW, Butler CC, Hopstaken RM, Hood K, Dinant GJ. Effect of point of care testing for C reactive protein and training in communication skills on antibiotic use in lower respiratory tract infections: cluster randomized trial. *BMJ*. 2009;338:b1374
13. Butler CC, Gillespie D, White P, Bates J, Lowe R et al. C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations. *N Engl J Med*. 2019;381(2):111-120
14. Little P, Stuart B, Francis N, Douglas E, Tonkin-Crine S et al.; GRACE consortium. Effects of internet-based training on antibiotic prescribing rates for acute respiratory-tract infections: a multinational, cluster, randomized, factorial, controlled trial. *Lancet* 2013;382(9899):1175-82
15. Stuart B, Hounkpatin H, Becque T, Yao G, Zhu S et al. Delayed antibiotic prescribing for respiratory tract infections: individual patient data meta-analysis. *BMJ* 2021;372:n808
16. Spurling GK, Del Mar CB, Dooley L, Clark J, Askew DA. Delayed antibiotic prescriptions for respiratory infections. *Cochrane Database Syst Rev*. 2017;9(9):CD004417
17. Cals JW, Schot MJ, de Jong SA, Dinant GJ, Hopstaken RM. Point-of-care C-reactive protein testing and antibiotic prescribing for respiratory tract infections: a randomized controlled trial. *Ann Fam Med*. 2010;8(2):124-33
18. Llor C, Moragas A, Cots JM. Implementation of the delayed antibiotic prescribing strategy. Prospective observation study in primary care. *Rev Esp Quimioter*. 2022 Apr;35(2):213-217
19. Stacey D, Légaré F, Lewis K, Barry MJ, Bennett CL et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev*. 2017;4(4):CD001431

