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# Innovations and Impacts of Antimicrobial Stewardship in Primary Care and Proximity Settings.

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## Introduction

Antimicrobial resistance (AMR) is a global health crisis that threatens the effectiveness of life-saving treatments. While hospitals have long been the focus of antimicrobial stewardship (AMS) programs, primary care and proximity settings such as community clinics, urgent care centers, and rural health posts are increasingly recognized as critical battlegrounds in the fight against AMR [1, 2].

AMS programs aim to optimize the use of antimicrobials to ensure effective treatment of infections while minimizing resistance, adverse effects, and costs.Proximity settings, often the first point of contact for patients, are uniquely positioned to influence early treatment decisions and reduce unnecessary antibiotic use. These settings account for the majority of antibiotic prescriptions, making them pivotal in shaping prescribing behaviors and public health outcomes [3, 4].

One of the most effective innovations in AMS is the use of behavioral science to influence prescribing. Studies show that interventions such as peer comparison feedback, commitment posters, and decision support tools can significantly reduce inappropriate antibiotic prescriptions for conditions like acute respiratory tract infections (ARIs), which are often viral and self-limiting [5, 6].

Rural and remote primary care settings face unique challenges, including limited access to diagnostics, specialist support, and stewardship infrastructure. A narrative review found that inappropriate prescribing rates were disproportionately higher in rural areas due to factors like clinician isolation, patient expectations, and lack of surveillance data.Longer-term interventions are needed to assess sustained impacts on resistance rates [7, 8].

Clinician support systems—including electronic prescribing alerts, audit-and-feedback mechanisms, and access to infectious disease consultation—have also proven effective in improving guideline adherence.Telemedicine, in particular, has expanded access to care while enabling stewardship practices such as delayed prescribing and virtual follow-ups. These tools are especially valuable in rural and underserved areas where specialist access is limited [9, 10].

## Conclusion

Rapid diagnostic tests (RDTs) and point-of-care testing (POCT) are revolutionizing AMS by enabling targeted therapy. C-reactive protein (CRP) tests help differentiate bacterial from viral infections. Rapid strep tests guide antibiotic use in pharyngitis. Urinalysis and culture protocols reduce overtreatment of asymptomatic bacteriuria. Integrating diagnostics into routine practice reduces empirical prescribing and enhances clinical confidence.

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