EDITORIAL

Community-acquired infections and stewardship practices — A Call to Action for a community physician (COMMUNITY Steward model)

Prasan Kumar Panda[1], Aroop Mohanty[2], Mahendra Singh[3]

[1]Department of Medicine (ID Division), All India Institute of Medical Sciences, Rishikesh, India
[2]Department of Microbiology, All India Institute of Medical Sciences, Gorakhpur, India
[3]Department of Community Medicine, All India Institute of Medical Sciences, Rishikesh, India

CORRESPONDING AUTHOR
Dr Mahendra Singh, Additional Professor, Department of Community Medicine, All India Institute of Medical Sciences, Rishikesh, India, 249203
Email: gehlot.mahendrasingh@gmail.com

CITATION
Panda PK, Mohanty A, Singh M. Community-acquired infections and stewardship practices — A Call to Action for a community physician (COMMUNITY Steward model). Indian J Comm Health. 2025;37(5):633-636.
https://doi.org/10.47203/IJCH.2025.v37i05.001
ARTICLE CYCLE
Received: 18/10/2025; Accepted: 22/10/2025; Published: 31/10/2025

ABSTRACT

Community-acquired infections (CAIs) account for the bulk of antimicrobial prescriptions in outpatient and primary-care settings. In India, syndromes such as community-acquired pneumonia, acute diarrhoeal disease, urinary tract infections, skin and soft-tissue infections, enteric fever, and seasonal vector-borne infections (dengue, scrub typhus, leptospirosis) drive antimicrobial demand and — when managed inappropriately — accelerate antimicrobial resistance (AMR). Community physicians occupy the gatekeeper role: their diagnostic choices, prescribing thresholds, advice on vaccination and prevention, and engagement with pharmacists and public-health systems determine how antibiotics are used at population scale. This editorial orders common CAIs by typical prevalence in community practice, outlines stewardship priorities for each, and adapts the Society of Antimicrobial Stewardship PractIces (SASPI) in India's integrated stewardship framework for community settings. Practical actions (COMMUNITY Steward model) include syndromic triage supported by point-of-care tests, narrow-spectrum empiric choices with rapid review, limiting durations, vaccination advocacy, and community surveillance. Strengthening these measures at the primary-care level is essential to slow AMR while maintaining good patient care.

KEYWORDS

Antimicrobial resistance (AMR); Primary care stewardship; Syndromic management; Point-of-care diagnostics; Outpatient antibiotic prescribing

INTRODUCTION

Most antimicrobial use occurs outside hospitals, and inappropriate community prescribing is a major driver of AMR globally and in India (1,2). Community physicians like general practitioners, family physicians, and clinicians in primary and secondary centres are frequently the first point of contact for patients with fever, cough, diarrhoea, urinary symptoms, or skin infections. In many regions, antimicrobials are accessible without prescription, and diagnostic uncertainty, time pressure, and patient expectations encourage empiric prescribing (3).

India's national and state action plans and the consensus of the Society of Antimicrobial Stewardship PractIces (SASPI) in India emphasise that stewardship must extend into the community, may be under one 'COMMUNITY Steward' model for primary care realities, explicitly adapting hospital-level practice points 'PRESCRIBES'(4,5). The following sections describe the common Community-acquired infections (CAIs) in the sequence community doctors encounter them,

their stewardship implications, and practical, evidence-based interventions community physicians can deploy immediately.

Community-acquired infections contributing to AMR

1. Community-acquired respiratory infections (including pneumonia): Respiratory infections represent the highest outpatient antimicrobial consumption worldwide, particularly in India, where respiratory syndromes account for nearly one-third of antibiotic prescriptions (1). Molecular surveillance data show increasing prevalence of multidrug-resistant pneumococci and a gradual decline in penicillin susceptibility among community isolates (6). *Streptococcus pneumoniae, Haemophilus influenzae,* and *Moraxella catarrhalis* have demonstrated rising resistance to macrolides, β-lactams, and co-trimoxazole following decades of indiscriminate therapy for largely viral upper respiratory tract infections (7).

2. Acute diarrhoeal disease: Acute diarrhoeal illness, primarily viral in origin, continues to be a major driver of unnecessary antibiotic consumption in community settings. The frequent use of fluoroquinolones and azithromycin for self-limiting diarrhoea has accelerated resistance in *Shigella, Vibrio cholerae*, and enterotoxigenic *E. coli* (8). Multidrug-resistant *Shigella sonnei* and *Shigella flexneri* now represent a growing concern in both pediatric and adult cohorts, threatening to undermine oral rehydration-based case management programs.

3. Urinary tract infections (UTIs): Community-derived *E. coli* and *Klebsiella pneumoniae* isolates are showing widespread resistance to fluoroquinolones and third-generation cephalosporins, driven largely by empirical and recurrent treatment without culture confirmation (9). Extended-spectrum β-lactamase (ESBL) production is now prevalent in 60–70% of community UTI isolates in several Indian and Southeast Asian reports. Carbapenem resistance, though still lower in community strains than in hospitals, is an emerging signal in tertiary laboratory networks.

4. Skin and soft-tissue infections (SSTIs): Increasing resistance in *Staphylococcus aureus*, particularly community-acquired methicillin-resistant strains (CA-MRSA), reflects the effect of widespread empiric cephalosporin use and topical antibiotic misuse (10). Community SSTIs caused by MRSA and β-hemolytic streptococci are often polymicrobial, and resistance to fusidic acid, mupirocin, and macrolides has been documented even in outpatient isolates.

5. Enteric fever (typhoid) and other bacterial enteritis: The emergence of extensively drug-resistant (XDR) *Salmonella Typhi* in South Asia epitomizes the direct consequences of unregulated community fluoroquinolone and cephalosporin use (11). Resistance to azithromycin, the last widely effective oral agent, has also been reported from India and Nepal. *Salmonella Paratyphi* A strains are showing parallel trends, raising concerns about the sustainability of oral therapy options for enteric fever.

6. Vector-borne and seasonal febrile illnesses like dengue, scrub typhus, and leptospirosis: Seasonal dengue outbreaks across India often lead to unnecessary empirical antibiotic therapy for undifferentiated fever, despite its viral etiology (12). Similarly, scrub typhus and leptospirosis, both bacterial infections with predictable sensitivity to doxycycline or azithromycin, are frequently treated empirically with multiple broad-spectrum regimens before definitive diagnosis, contributing to selection pressure on both gram-positive and gram-negative flora (13,14).

7. Viral respiratory epidemics and the COVID-era experience: During the COVID-19 pandemic, empirical use of azithromycin, doxycycline, and fluoroquinolones increased dramatically, despite bacterial co-infection rates being less than 10% (15). This surge in antibiotic exposure during viral outbreaks amplified resistance among community respiratory pathogens and opportunists, illustrating how epidemics can indirectly accelerate AMR through inappropriate outpatient prescribing.

Stewardship: community physicians as gatekeepers

Community physicians can translate stewardship into routine practice through five interlocking strategies.

1. Diagnostic stewardship and triage - Use validated clinical scores and point-of-care tests (POCT, rapid influenza tests, malaria/dengue rapid tests where indicated) to distinguish likely bacterial disease from viral or self-limited illness. POCT has consistently reduced immediate antimicrobial prescribing for respiratory infections in primary care trials and meta-analyses (4,16).

In community medicine, diagnostic uncertainty frequently leads to over-treatment of colonizing or contaminant flora from throat, sputum, urine, or wound cultures. For example, Streptococcus pneumoniae may colonize the upper respiratory tract without causing pneumonia, and asymptomatic bacteriuria often yields positive E. coli cultures that do not merit therapy. Panda et al highlighted the importance of differentiating true pathogens from commensals in culture reports through a structured "pathogen–non-pathogen" framework (17). Applying this principle in primary and community settings prevents reflexive

antimicrobial initiation, minimizes unnecessary exposure, and supports population-level antimicrobial stewardship.

2. Rational empiric therapy - When antimicrobials are indicated, choose narrow-spectrum agents aligned with local antibiograms and guideline recommendations; avoid fluoroquinolones or broad cephalosporins as first-line for uncomplicated presentations unless resistance data demand them (4,15). Document indication and planned duration on every prescription.

3. Duration and review - Limit durations to evidence-based minimums (e.g., 3–5 days for uncomplicated cystitis or 5–7 days for many community pneumonias when clinically improving) and schedule review at 48–72 hours to de-escalate or stop therapy based on clinical course and test results.

4. Prevention & vaccination - Active promotion of pneumococcal, influenza, typhoid, and COVID-19 vaccination reduces disease incidence and antimicrobial demand. Community health education on hygiene, safe water, and vector control curtails diarrhoeal and vector-borne disease incidence (4,16).

5. Systems measures - Work with pharmacists to discourage over-the-counter antimicrobial sales, establish simple prescription audits, and create referral pathways to laboratories for culture and susceptibility. Community physicians should feed local data to district surveillance systems to generate community antibiograms that guide empiric therapy (2).

Educational conversations with patients are critical: explain why antibiotics are unnecessary for most viral illnesses, outline red flags that warrant return, and stress adherence when antibiotics are prescribed.

SASPI practice points adapted for community physicians (Box 1, COMMUNITY Steward model)

The SASPI framework recommends 42 practice points for integrated stewardship in tertiary care; several are directly translatable to community settings (4). Key adapted points:

- Standardise empiric algorithms for common syndromes (respiratory, urinary, diarrhoeal, febrile illness), referenced to local antibiograms.
- Document indication and duration on all prescriptions; implement simple electronic or paper audit logs.
- Deploy POCT (CRP, malaria/dengue) where feasible to support decisions.
- Restrict broad-spectrum agents in outpatient care; reserve fluoroquinolones/third-generation cephalosporins for guided indications.
- Vaccination drives at primary-care clinics (pneumococcal, influenza, typhoid).
- Pharmacy engagement to stop OTC antibiotics and provide counselling.
- Syndromic surveillance feeding into district/state laboratories to produce community antibiograms.
- Public education campaigns to reduce self-medication and partial antimicrobial courses.
- Referral pathways for complicated cases (e.g., suspected severe CAP, CNS or intra-abdominal infection).
- Quarterly audits & feedback with simple metrics (antimicrobial prescriptions per 100 consultations; % guideline-concordant therapy).

Applying these steps at the community level bridges hospital and public-health stewardship, amplifying impact.

Box 1. The 10 core elements of the IAS framework — the "COMMUNITY Steward" model

Letter	Action Element	Description
C	Confirm infection	Start antibiotics only when bacterial illness is likely; use Point of Care Tests/stool/urine tests when available.
O	Obligate prescription	Record clear indication, drug, dose, and duration on every antimicrobial prescription.
M	Minimise spectrum	Choose the narrowest effective agent; avoid routine fluoroquinolones and 3rd-generation cephalosporins.
M	Monitor at 72-96 h	Reassess clinical response and stop/adjust therapy promptly.
U	Uphold vaccination	Promote influenza, pneumococcal, Tdap, MMR, Hepatitis-B, Hepatitis-A, and typhoid adult vaccines to reduce infection burden apart from childhood immunization.
N	Negate OTC use	Prevent over-the-counter (OTC) antimicrobial sales; collaborate with local pharmacists.
I	Inform empiric choice	Use state, district, or hospital antibiograms for evidence-based empiric therapy.
T	Teach as role model	Educate patients, their families on viral illness care, red flags, and when antimicrobial are unnecessary.

Letter	Action Element	Description
Y	Yearly audit & feedback	Participate in regular prescribing audits and accept corrective feedback.
Steward	Strengthen stewardship networks	Engage with SASPI/AMR networks for shared data, guideline alignment, and unified community policy.

CONCLUSION

Community physicians hold the most influential seat in the fight against AMR: most antimicrobial courses begin in their clinics. By ordering CAIs by prevalence, tailoring diagnostics and therapeutics to likely pathogens, limiting durations, promoting vaccination, and partnering with pharmacists and public-health systems, clinicians can sharply reduce avoidable antimicrobial exposure. The SASPI practice points provide a practical scaffold; local adaptation and modest investments (POCT, audits, vaccination clinics) yield high returns in reduced AMR and improved patient care. Stewardship in the community is pragmatic, patient-centred, and essential — it preserves effective therapy for those who truly need it.

AUTHORS CONTRIBUTION

All authors have contributed equally.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

CONFLICT OF INTEREST

There is no conflict of Interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

REFERENCES

1. Vikhe VB, et al. A systematic review of community-acquired pneumonia in Indian adults. Cureus/PMC. 2024. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC11300190/
2. World Health Organization. Antimicrobial resistance. WHO fact sheet. 2023. https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance
3. Kotwani A, Joshi J, Sankhil A. Over-the-counter sale of antibiotics in India: providers' perspectives. Antibiotics (Basel). 2021;10(9):1123.
4. Singh H, Panda PK, Patro S, et al. Integrated Antimicrobial Stewardship in India: Consensus on Best Practices, Current Baseline, and Identified Barriers. JASPI. 2024;2(4):32–45.
5. Mohapatra S, Safiq N, Panda PK. An Integrated antimicrobial stewardship approach in tertiary care hospitals in developing countries using a multi-domain framework ('PRESCRIBES' checkpoint) - A call for action. Int J Infect Dis. 2026 Jan 10:108388.
6. Brown KA, et al. Macrolide resistance among Streptococcus pneumoniae: implications for community prescribing. Clin Microbiol Infect. 2023;86:256-308.
7. Llor C, Bjerrum L. Antibiotic use in acute respiratory tract infections. BMJ. 2014;349:g6426. doi:10.1136/bmj.g6426.
8. Harris AM, et al. Antibiotic overuse in diarrhoeal illness and stewardship implications. J Glob Health. 2021;11:04053. doi:10.7189/jogh.11.04053.
9. Gupta K, et al. Update on management of urinary tract infections. Clin Infect Dis. 2023;76(3):e618–e628.
10. Kowalski TJ, Berbari EF, Osmon DR. Epidemiology, treatment, and prevention of community-acquired methicillin-resistant Staphylococcus aureus infections. Mayo Clin Proc. 2005;80(9):1201-7.
11. Walker J, et al. Assessing global risk of typhoid outbreaks and XDR strains. Nat Commun. 2023;14:42353.
12. Subarna RT, Saiyan ZA. Understanding the unprecedented 2023 dengue outbreak in Bangladesh: a data-driven analysis. IJID Reg. 2024;12:100406.
13. Devamani C, Alexander N, Chandramohan D, Stenos J, Cameron M, Abhilash KPP, Mangtani P, Blacksell S, Vu HTT, Rose W, Schmidt WP. Incidence of Scrub Typhus in Rural South India. N Engl J Med. 2025 Mar 13;392(11):1089-1099.
14. Gupta N, Wilson W, Ravindra P. Leptospirosis in India: a systematic review and meta-analysis of clinical profile, treatment and outcomes. Infez Med. 2023 Sep 1;31(3):290-305.
15. Krishnamoorthy Y, Govindan D, Karunakaran M, Parveen M, Manohar A, Al-Tawfiq JA. A systematic review of the effectiveness and cost-effectiveness of implementing antimicrobial stewardship program at tertiary care facilities in India. IJID Reg. 2025 May 12;15:100666.
16. Martínez-González NA, 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 (Basel). 2020 Sep 16;9(9):610.
17. Panda PK, Yadav B, Sahu SN, Singh V. Pathogen vs Non-pathogen from a Culture-positive Report: How to Distinguish and Who Will? JASPI. 2024;2(3):10-14.